Glendale Beeline
2009 Line-by-Line Analysis
Final Report
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Executive Summary

Glendale Beeline is one of two major public transportation providers in the City of Glendale and surrounding areas. Beeline operates eight local fixed-route bus routes and two Metrolink express routes. From its origins in Glendale, Beeline's service area now extends to La Cañada Flintridge and parts of Montrose and La Crescenta.

The Beeline carries approximately 13,000 riders on a typical weekday, 3,300 riders on Saturday, and 1,300 riders on Sunday. Figure ES.1 displays a map of the route network. The City of Glendale operates the Beeline through its service contractor, MV Transportation.

The City of Glendale is in a transit-rich environment, served not only by Beeline routes but also by services operated by Metro and Los Angeles Department of Transportation (LADOT), with connections to Pasadena ARTS and Burbank Bus services. Metro is the most important system in terms of regional service coordination because of the sheer volume of Metro service within Glendale. Figure ES.2 shows the entire transit network, including Beeline, Metro, and other services, within the Glendale area.

Figure ES.1
Glendale Beeline Route Network

Figure ES.2
Transit Network in the
Beeline Service Area

This Line-by-Line Analysis of Beeline fixed-route transit services has the following objectives:

- Gather current service and patronage data to assist in evaluating current performance and planning future service;

- Assess systemwide operating ridership and performance of the Beeline and Metro services in Glendale;

- Conduct a detailed analysis of current ridership and performance measures at the route, route segment, time of day, and day of week levels;

- Obtain riders demographics and travel information from an on-board ridership survey;

- Develop a series of recommendations for Beeline's transit services.

This executive summary reports findings from the major study tasks, and concludes with the recommended service plan for the Glendale Beeline system.

Findings – Service

Table ES.1 summarizes ridership, service, and performance data by route for weekdays. Tables ES.2 and ES.3 provide the same information for Saturday and Sunday service. Productivity is measured as passenger boardings per revenue hour. Cost per passenger is the operating cost divided by the number of passengers. Schedule adherence is the percentage of trips between one minute early and five minutes late at all timepoints along a given route.

Table ES.1
Ridership, Service, and Performance Data by Route – Weekday

Route	Ridership	Revenue Hours	Productivity	Cost per Passenger	Schedule Adherence
1	998	32.7	30.5	$2.50	85.7%
2	1,107	30.8	35.9	$2.12	82.0%
3	3,930	94.0	41.8	$1.82	67.4%
4	2,560	38.1	67.2	$1.13	71.8%
5	1,102	24.5	45.0	$1.70	88.3%
6	1,060	25.3	41.9	$1.82	65.2%
7	1,632	39.2	41.6	$1.83	48.7%
11	389	11.6	33.4	$2.28	90.5%
12	368	23.2	15.9	$4.81	83.7%
13	41	3.1	13.4	$5.68	100.0%
Total/Average	13,187	322.5	40.9	$1.87	73.8%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009

Route 3 has the highest ridership on weekdays, with almost 4,000 daily boardings, followed by Route 4 and Route 7. Route 13 and the two Metrolink express routes (Routes 11 and 12) have the lowest ridership.

Route 4 is the most productive route in the system on weekdays, with 67 boardings per revenue hour. Route 4 serves several transit-oriented neighborhoods. Route 5 ranks second in weekday productivity, with 45 boardings per revenue hour. The least productive weekday route

is Route 13, with 13 boardings per revenue hour, followed by Route 12 at 16 boardings per revenue hour.

Cost per passenger is inversely correlated with productivity. The most productive routes require the lowest cost per passenger. Route 4 is an example, with the highest productivity and the lowest cost per passenger ($1.13). At the other end of the spectrum, the cost per passenger on Route 13 is $5.68. Overall cost per passenger is $1.87 on weekdays.

Schedule adherence is 74 percent overall on weekdays. This is within the range seen at most transit systems when on-time performance is measured at each timepoint throughout the day. Shorter routes (Route 13, Route 11, and Route 5) have the best schedule adherence, while longer routes (Route 7 and Route 3) rank toward the bottom.

Tables ES.2 and ES.3 provide the same information for Saturday and Sunday service. Route 4 has the highest ridership and productivity on both Saturday and Sunday. Route 5 has the lowest Saturday ridership, followed by Route 7. Route 7 has the lowest productivity on Saturday. Overall productivity is 29.7 boardings per revenue hour on Saturday and 26.2 on Sunday. Cost per passenger is $2.57 on Saturday and $2.91 on Sunday. Schedule adherence is 79 percent on Saturday and 82 percent on Sunday.

Table ES.2
Ridership, Service, and Performance Data by Route – Saturday

Route	Ridership	Revenue Hours	Productivity	Cost per Passenger	Schedule Adherence
1	438	16.5	26.5	$2.88	81.7%
2	486	16.4	29.6	$2.57	73.9%
3	648	22.7	28.5	$2.67	68.9%
4	843	16.3	51.8	$1.47	78.6%
5	226	8.2	27.6	$2.76	80.8%
6	449	16.2	27.7	$2.76	88.0%
7	243	15.8	15.4	$4.96	79.0%
Total/Average	3,333	112.1	29.7	$2.57	78.9%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009

Table ES.3
Ridership, Service, and Performance Data by Route – Sunday

Route	Ridership	Revenue Hours	Productivity	Cost per Passenger	Schedule Adherence
1	305	16.8	18.2	$4.19	84.4%
2	348	16.5	21.1	$3.62	74.1%
4	646	16.3	39.7	$1.92	86.6%
Total/Average	1,299	49.5	26.2	$2.91	82.0%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009

Another way to consider transit system performance is to examine ridership and productivity by route and time of day on weekdays. Table ES.4 presents ridership by route and time of day, and Table ES.5 shows productivity by route and time of day. AM peak is defined as 6:00 to 8:59 a.m., midday is 9:00 a.m. to 2:59 p.m., and PM peak is 3:00 p.m. to the end of the service day.

Table ES.4
Weekday Ridership by Route and Time of Day

Route	AM Peak	Midday	PM Peak	Total	Percent
1	203	486	309	998	7.6%
2	201	595	311	1,107	8.4%
3	820	1,920	1,190	3,930	29.8%
4	601	1,217	742	2,560	19.4%
5	318	366	418	1,102	8.4%
6	230	502	328	1,060	8.0%
7	412	756	464	1,632	12.4%
11	221		168	389	2.9%
12	199		169	368	2.8%
13	16	8	17	41	0.3%
Total	3,221	5,850	4,116	13,187	100.0%
Percent	24.4%	44.4%	31.2%	100.0%	

Source: Ridecheck Data, November 2008

Almost 45 percent of Beeline ridership occurs during the midday period. Route 3 has the highest ridership in each time period, followed by Route 4 and Route 7. Routes 3 and 4 combined account for 49 percent of all ridership on the Beeline system.

Table ES.5
Weekday Productivity by Route and Time of Day

Route	AM Peak	Midday	PM Peak	Total
1	25.3	33.2	30.8	30.5
2	31.3	38.8	34.3	35.9
3	35.0	44.7	43.1	41.8
4	67.9	66.0	68.7	67.2
5	58.0	31.4	56.7	45.0
6	38.4	41.0	46.4	41.9
7	43.4	40.2	42.5	41.6
11	41.3		26.7	33.4
12	17.4		14.4	15.9
13	17.1	8.7	14.2	13.4
Total	37.7	43.4	40.3	40.9

Source: Ridecheck Data, November 2008

Productivity is also slightly higher in the midday period, although productivity is reasonably consistent throughout the day. Route 4 is the most productive route and Route 13 is the least productive at all times of day.

Table ES.6 summarizes key results from the on-board survey by route. Route 13 is not included in Table ES.6 because we received only four responses from Route 13 riders.

Table ES.6
Selected On-board Survey Results by Route

Route	Trip Purpose		Passenger Age			% 0-vehicle households	Overall Rating of Beeline
	% work trips	% school trips	% under 18	% 18-24	% 65 and over		
1	44%	12%	6%	15%	12%	41%	3.32
2	37%	10%	11%	14%	12%	44%	3.44
3	32%	35%	17%	29%	8%	33%	3.36
4	28%	26%	25%	18%	8%	44%	3.42
5	25%	41%	41%	10%	7%	26%	3.31
6	30%	17%	23%	16%	6%	48%	3.37
7	17%	58%	17%	39%	5%	26%	3.17
11	98%	1%	2%	2%	4%	3%	3.27
12	99%	1%	0%	4%	4%	4%	2.97
System Average	38%	26%	16%	20%	8%	34%	3.32

Source: On-board Survey, November 2008

Work is the trip purpose for virtually every trip on the Metrolink express routes. Among local routes, Routes 1 and 2 along Brand and Central have the highest proportion of work trips. A majority of riders on Route 7 and a significant proportion of Route 5 and Route 3 riders are traveling to or from school. Routes 3 and 7 serve GCC and all three routes serve major high schools. The percentage of young riders under 18 is highest on Routes 5, 4, and 6, while the percentage of college-age students (ages 18 through 24) is highest on Routes 7 and 3 serving GCC. Routes 1 and 2 along Brand and Central have the highest proportion of riders age 65 and over. The percentage of riders from zero-vehicle households is lowest on routes serving west, northwest, and north Glendale. There is little variation in overall ratings; Route 12 received the lowest average rating and Route 2 had the highest.

Fares

The purpose of the fare analysis, presented in Chapter 4, is to identify near-term strategies to maximize ridership and farebox revenues. While not intended as a comprehensive analysis of all fare policy elements, this analysis addresses important near-term alternatives.

As do most transit providers, the Glendale Beeline faces continual challenges to accommodate demand for transit service within the constraints of available budget. Fare policy is a critical element in addressing these challenges, because fare policy affects both the demand and budget sides of the issue. Fare policy is also extremely sensitive because of its high visibility to the City Council, riders, and the broader community. This study proposes a fare philosophy that offers pricing and fare media that ensure customer convenience and simplicity, promotes travel flexibility, improves mobility locally and within the region, and rewards regular use. Fare adjustments will be needed periodically to ensure that the Glendale Beeline can maintain and enhance current service levels and passengers pay a reasonable portion of the cost of operating services.

Every transit system is unique in certain respects, but it is often useful to know how similar systems have approached fare issues. To this end, an analysis of fare levels at municipal systems and other transit agencies within the greater Los Angeles area was conducted. These

findings establish a context in which to analyze alternatives for the Glendale Beeline. Key findings identified as a result of the peer review are:

- Current Glendale Beeline cash fares are lower than the cash fares for almost all of the other municipal systems in the Los Angeles area for both local and express services. The Beeline express routes are shorter than most other peer systems' express routes.

- Glendale Beeline does not issue internal transfers to other Beeline routes, similar to two other peer systems. The Beeline has one of the highest prices for interagency transfers (50 cents), primarily because its base fare is so low. The senior/disabled transfer price at the Beeline is comparable to other agencies.

- Glendale Beeline's pass multiplier is at the peer group average for adult passes and is the lowest in the peer group for senior/disabled passes.

- The Beeline is the only system among its peers to offer both a 31-day pass and a multiple-ride card.

Table ES.7 presents the proposed changes to the Beeline fare structure. A phased approach over three years is recommended to achieve fare levels similar to those of peer systems (many of which are implementing or considering fare increases) and to ensure that riders pay a "fair share" of the overall system costs.

Table ES.7
Beeline Fare Recommendations

Fare Category	Current	January 1, 2010	July 1, 2010	July 1, 2011
Local general cash	$0.25	$0.50	$0.75	$1.00
Local senior/disabled cash	$0.15	$0.25	$0.35	$0.50
General 31-day pass	$12.00	$24.00	$36.00	$48.00
Senior/disabled 31-day pass	$4.50	$12.00	$18.00	$24.00
10-ride card	$2.00	$4.25	--	--
General interagency transfers	$0.50	No change		
Senior/disabled interagency transfers	$0.25	No change		
Express fare	$1.00	$2.00	$3.00	$4.00

Two other alternatives are also recommended for implementation within the next year:

- Discontinue acceptance of Metro passes. Glendale Beeline will continue to accept the EZ Pass. The Beeline is not reimbursed for boardings using Metro passes, but is reimbursed for EZ Pass boardings.

- Discontinue the Beeline 10-trip card. Glendale is the only municipal system to offer a time-based pass (the 31-day Metrocard) and a multiple-trip card. The 10-trip card accounts for less than four percent of all boardings.

Table ES.8 shows the impacts of these recommendations on ridership and revenue. Note that because the first increase is slated to take place in the middle of a fiscal year, ridership and revenue impacts reflect only six months of the new fares. Thus, some of the impact from the January 1, 2010 fare change is delayed until FY 2011.

Table ES.8
Ridership and Revenue Impacts of Fare Recommendations

Category	Current	January 1, 2010	July 1, 2010	July 1, 2011
Annual ridership	2,821,000	2,491,000	1,900,000	1,744,000
Annual percentage change in ridership	--	-11.7%	-23.7%	-8.2%
Annual revenue	$425,000	$576,000	$909,000	$1,081,000
Annual percentage change in revenue	--	+35.6%	+57.8%	+18.9%

Findings and Recommendations by Route

The following pages highlight major issues on each route and describes the recommended actions. Minor schedule adjustments have been proposed for all Beeline routes to improve on-time performance; the individual segment-level changes are not listed in this executive summary.

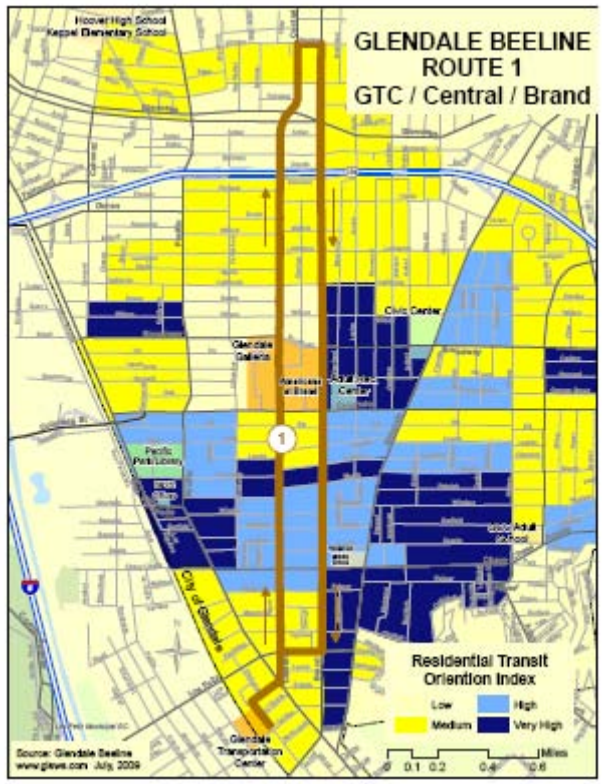
The maps for each route include an overlay of the Residential Transit Orientation Index (RTOI). Chapter 7 of this report explains the RTOI in greater detail, but it is designed to measure the orientation toward transit use based on demographic characteristics such as income, zero-vehicle households, percent elderly, percent youth, and population density. Dark blue on the maps indicates census block groups with very high transit orientation and light blue indicates high transit orientation. The RTOI is an important tool to identify neighborhoods where transit use is most likely to occur.

Routes 1 and 2 – GTC/Central/Brand and GTC/Brand/Central

The primary function of both routes is to serve the Brand and Central commercial and retail corridors in and near downtown. Neither route serves residential areas of the City outside of downtown. A secondary function is to connect downtown with the GTC throughout the day and on weekends. Metro Rapid Line 794 formerly served Brand but now stays on San Fernando Road.

Productivity on both routes is lower than expected (and below the Beeline average), due to the extensive service provided. There is interest in a signature service along Brand Boulevard, but uncertainty as to how this concept would fit in with the existing Routes 1 and 2.

Routes 1 and 2							
Route	Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
1	Weekday	998	7 of 10	30.5	40.9	$2.50	$1.87
1	Saturday	438	5 of 7	26.5	29.7	$2.88	$2.57
1	Sunday	305	3 of 3	18.2	26.2	$4.19	$2.91
2	Weekday	1,107	4 of 10	35.9	40.9	$2.12	$1.87
2	Saturday	486	3 of 7	29.6	29.7	$2.57	$2.57
2	Sunday	348	2 of 3	21.1	26.2	$3.62	$2.91

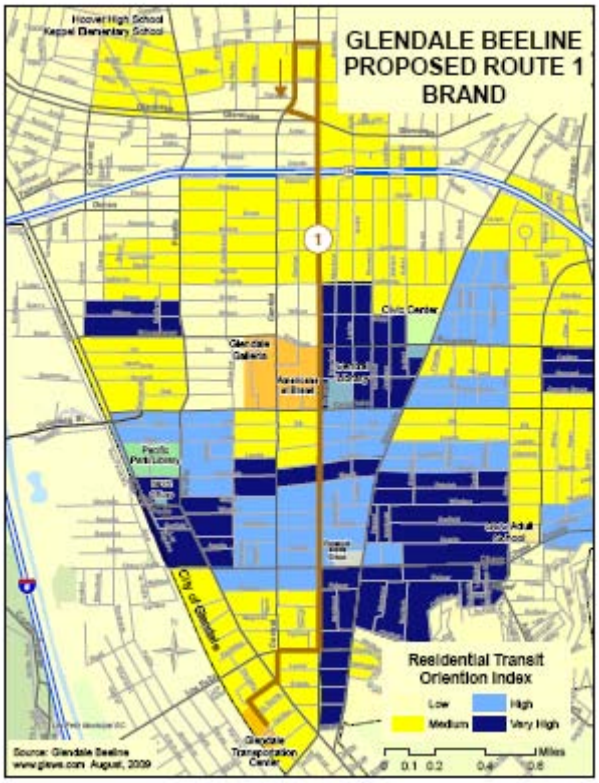


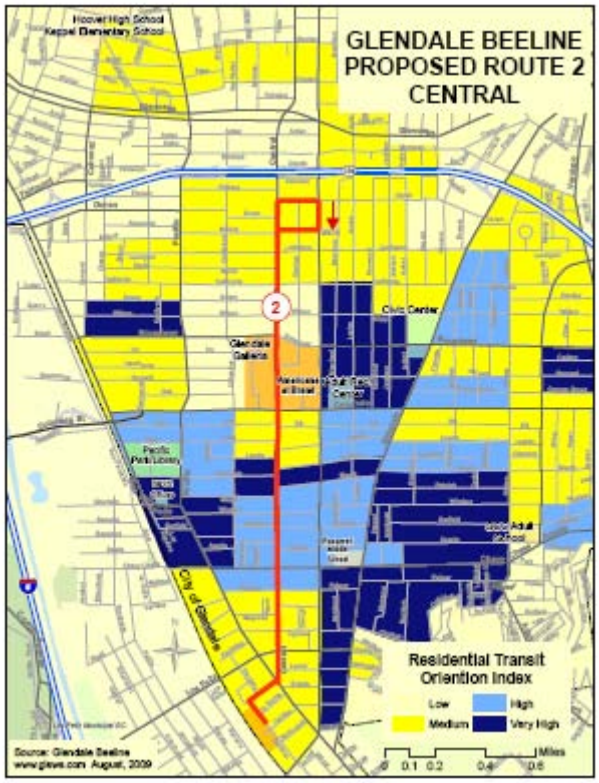
Recommended Service Plan

- Establish 15-minute service on Brand (now 20 minutes) and 30-minute service on Central (now 20 minutes) as far north as Doran only. This option achieves increased frequency along Brand, an important goal of the "Buzz" signature service concept, while continuing to serve most of Central Avenue. This can be done within existing weekday resources. Another weekend bus is required, thus increasing revenue hours on weekends and overall.

These changes are highlighted on the map. Impacts are shown below. This recommendation increases annual net operating cost by $36,000.

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	2,346	$422	($2,958)	($3,380)	(51)
Saturday	5,903	$1,063	$20,720	$19,657	357
Sunday	3,207	$577	$20,720	$20,143	357
Total	11,456	$2,062	$38,482	$36,420	663

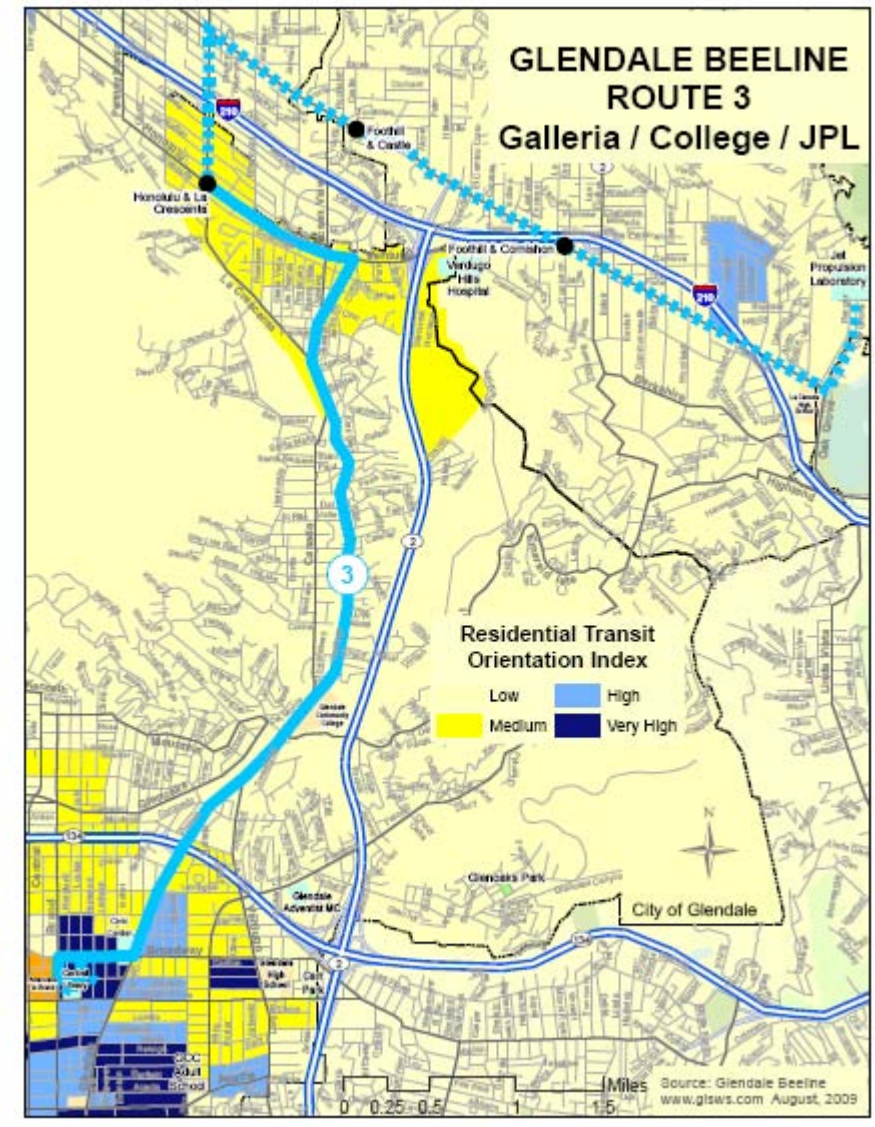




Route 3 – Galleria/College/JPL

Route 3 has multiple functions. Its primary purpose is to connect downtown with GCC. Ridership and productivity are strongest along this segment of the route. Connections to La Cañada High School on the northern portion of the route are also important, particularly in the afternoon. Other schools in the area also contribute significant ridership in the afternoon. JPL is an important destination on Route 3, but is less important to the route than the schools, especially because many of the boardings and alightings at JPL are transfers to and from Metro Line 177 serving Pasadena.

Route 3						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	3,930	1 of 10	41.8	40.9	$1.82	$1.87
Saturday	648	2 of 7	28.5	29.7	$2.67	$2.57
Sunday	No Service					

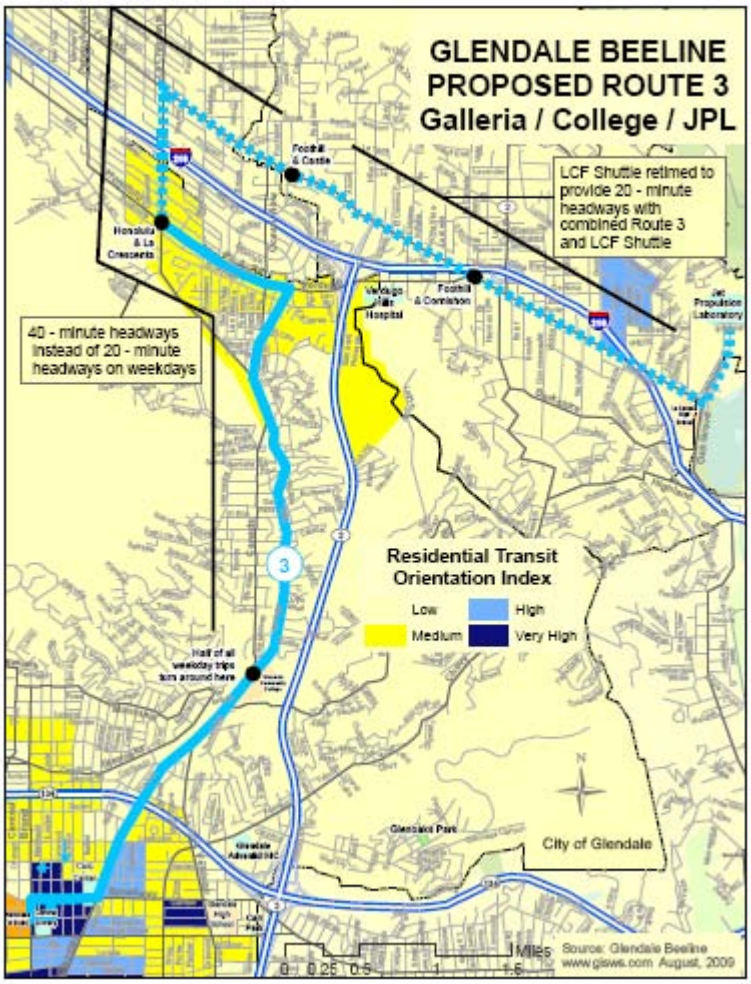


Recommended Service Plan

- Create Route 3A – Downtown Glendale to GCC Only. Operate alternate trips to GCC and to JPL. This will provide a better match between service and demand on Route 3: Route 3 productivity is 76 boardings per revenue hour between Downtown and GCC and 29 boardings per revenue hour between GCC and JPL.
- Add a PM trip to address overcrowding by pulling out the PM Route 12 bus early. This will ease overcrowding and maximize the use of existing vehicles.
- With La Cañada's concurrence, move the LCF Express service hours to the afternoon to help out with overcrowding at La Cañada High School in the afternoon.

These changes are highlighted on the map. Impacts are shown below. These recommendations reduce annual net operating cost by $359,000.

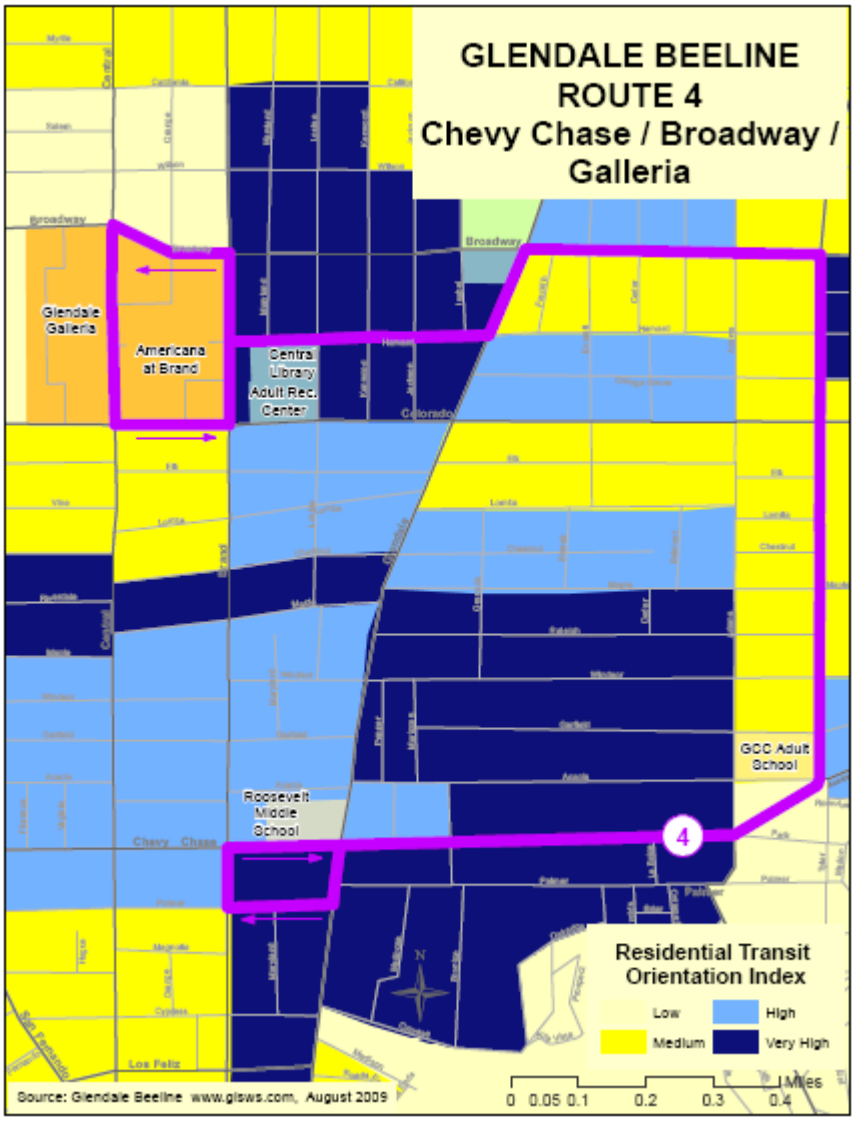
Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	(67,754)	($12,196)	($368,961)	($356,766)	(6,361)
Saturday	0	$0	($1,840)	($1,840)	(32)
Total	(67,754)	($12,196)	($370,801)	($358,605)	(6,393)



Route 4 – Chevy Chase/Broadway/Galleria

Route 4 is a strong route that connects several destinations in and near downtown Glendale and serves neighborhoods where the demographics are favorable for high transit usage. At the time of the ridecheck, Brand & Broadway was the connecting point for Metro Rapid Line 794, but Metro has rerouted this service via San Fernando Road. A connection to San Fernando Road is desirable. There are transit oriented neighborhoods west of the current Route 4 at both ends, on Chevy Chase and on Broadway.

Route 4						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	2,560	2 of 10	67.2	40.9	$1.13	$1.87
Saturday	843	1 of 7	51.8	29.7	$1.47	$2.57
Sunday	646	1 of 3	39.7	26.2	$1.92	$2.91



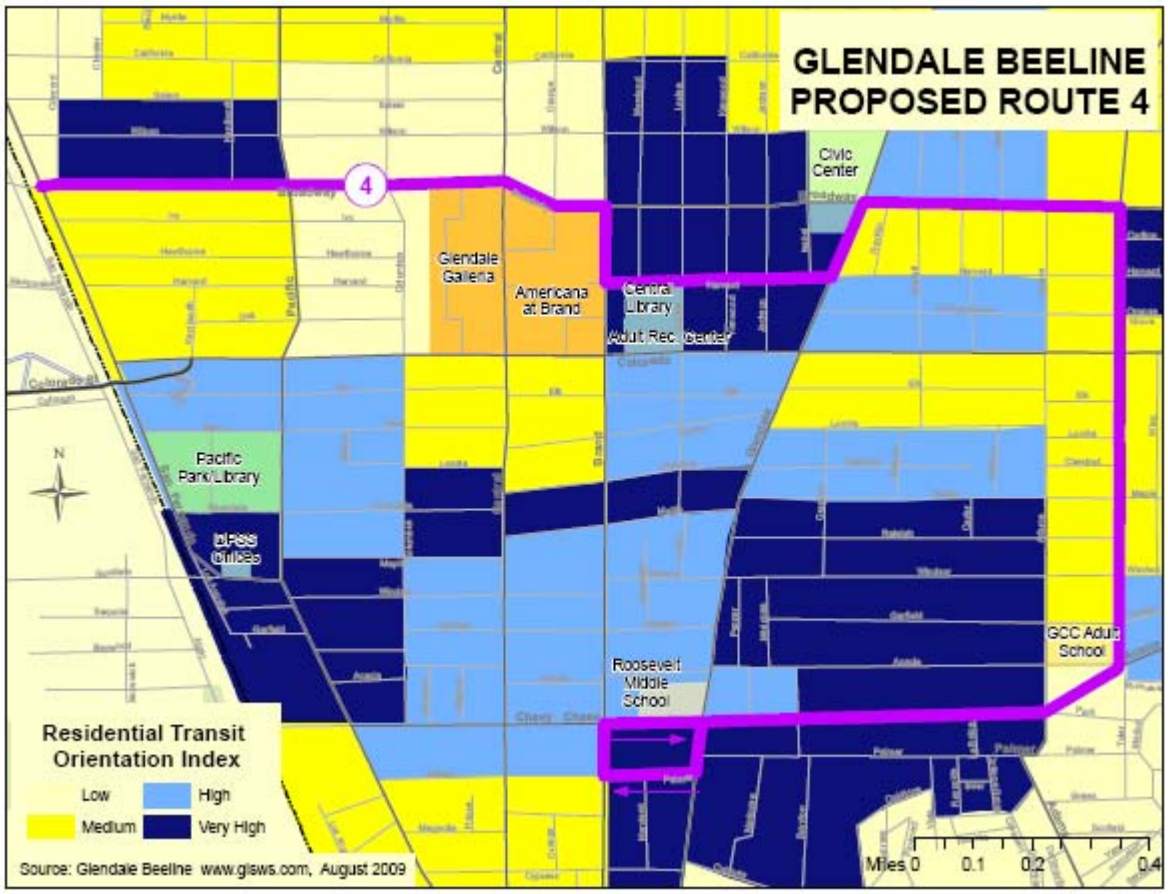
Recommended Service Plan

- Extend Route 4 west on Broadway to provide a connection to Metro Rapid Line 794 on San Fernando Road. This change also provides additional east-west service along a segment of Broadway, serves a transit-oriented neighborhood.

- Change the headway from 16 to 15 minutes. A headway of 15 minutes is much easier to remember, because the bus arrives at the same time each hour.

The route change is highlighted on the map. Impacts are shown below. These recommendations increase annual net operating cost by $204,000. Thus, savings generated by other recommendations are reinvested in Route 4, which currently has the highest productivity of any route in the Beeline system.

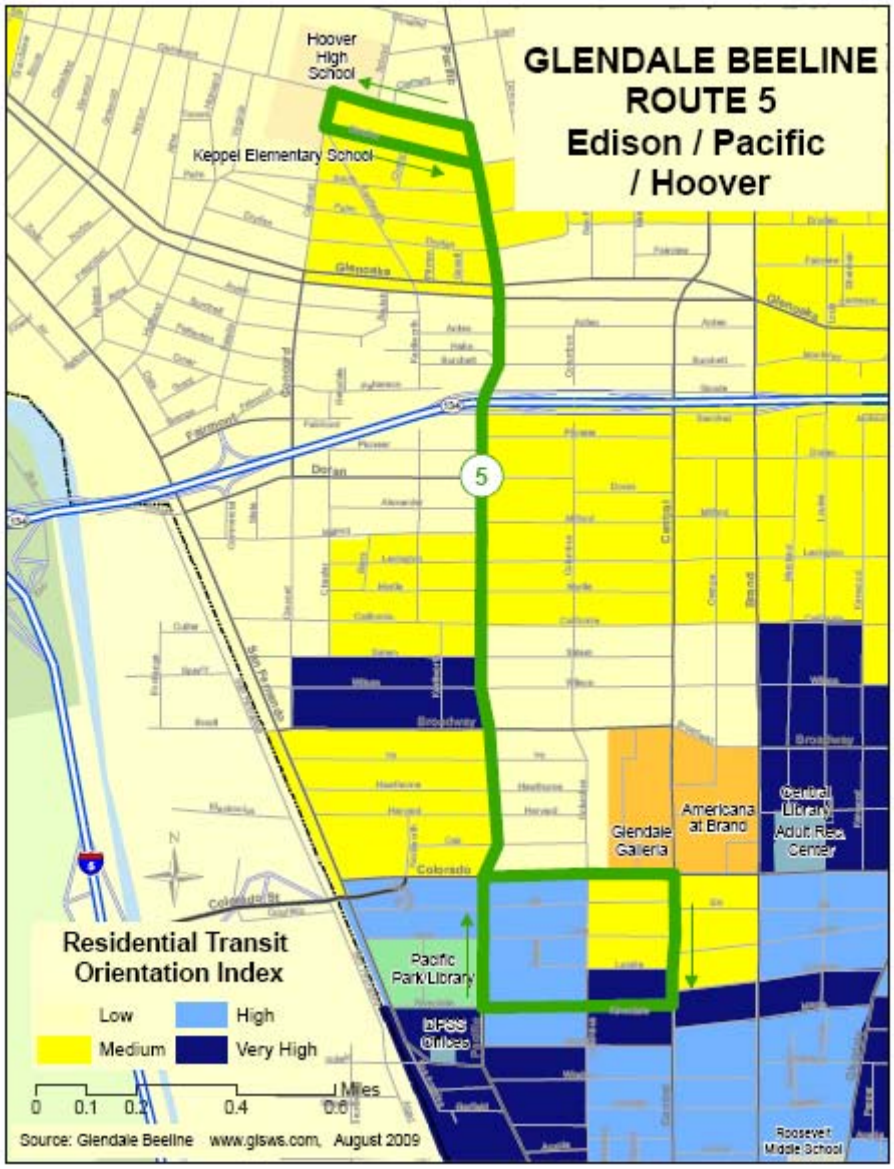
Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	127,538	$22,957	$185,171	$162,214	3,193
Saturday	12,254	$2,206	$22,861	$20,656	394
Sunday	9,390	$1,690	$22,861	$21,171	394
Total	149,182	$26,853	$230,893	$204,041	3,981



Route 5 – Edison/Pacific/Hoover

Route 5 is the only north-south route west of downtown in the Beeline network. Its primary function is bringing students to and from Hoover High School and Toll Middle School. Approximately 40 percent of all passenger activity occurs at the Glenwood & Concord stop adjacent to the school. Weekday productivity is one of the strong points of this route, with the second-highest productivity in the Beeline system (trailing only Route 3). A few segments experience over 100 boardings per revenue hour at certain times of day.

Route 5						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	1,102	5 of 10	45.0	40.9	$1.70	$1.87
Saturday	226	7 of 7	27.6	29.7	$2.76	$2.57



Recommended Service Plan

- Establish a consistent headway of 20 minutes on weekdays and 40 minutes on Saturday. The current weekday headway alternates between 20 and 22 minutes, while the current Saturday headway is 39 minutes.

- Add a school tripper to address overcrowding in the afternoon. This can be done by pulling out a Route 12 bus early to make one trip on Route 5, thus easing overcrowding while maximizing the use of current vehicles.

Extending the route south to Chevy Chase is an attractive option, but would require an increase in revenue hours and an additional bus. This is a long-range service concept, for implementation when added funds and buses become available.

Impacts of the recommendations are shown below. These changes increase annual net operating cost by $6,000.

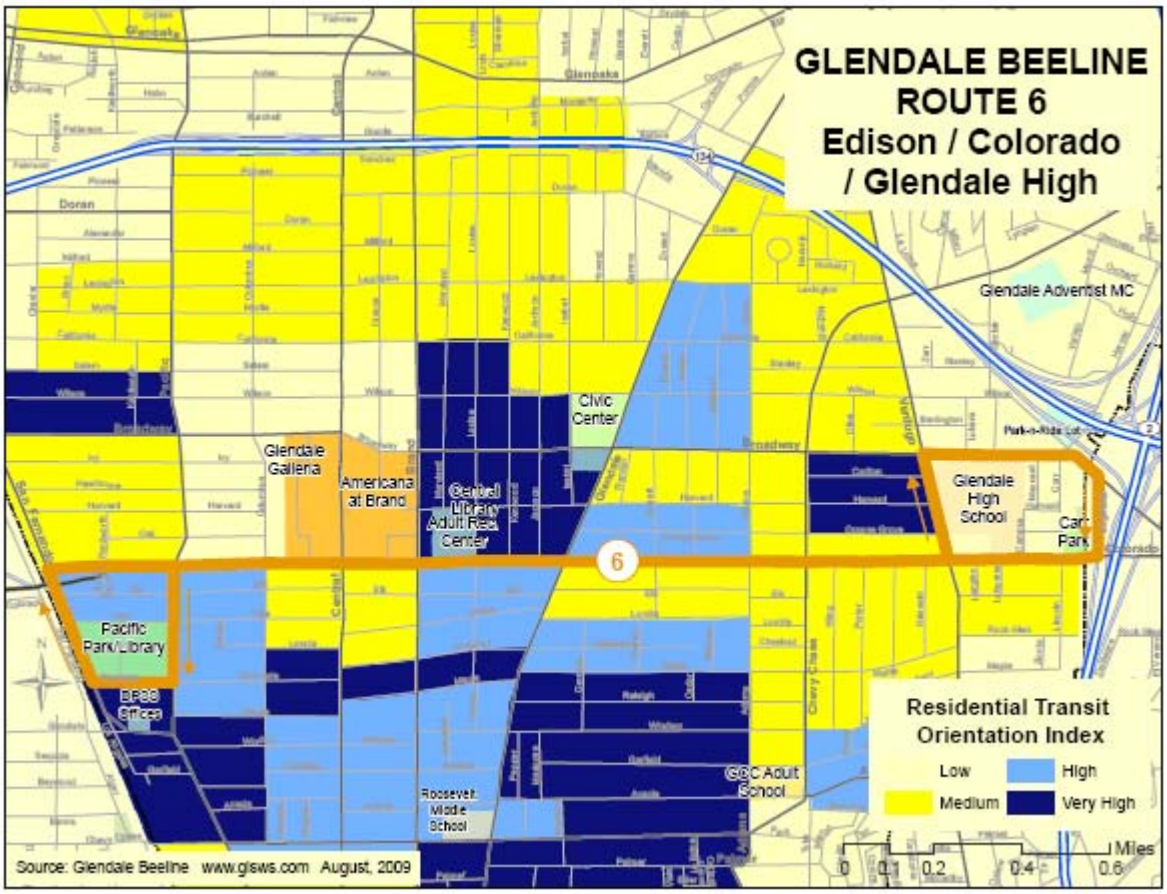
Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	3,170	$571	$6,803	$6,233	117
Saturday	26	$5	$90	$86	2
Total	3,196	$575	$6,894	$6,319	119

Route 6 – Edison/Colorado/Glendale High

The primary function of Route 6 is to provide east-west crosstown service along Colorado Street. Downtown and Glendale High School are the major trip generators along the route. The high school is an important trip generator, but school ridership is not the dominant factor on this route. Route 6 connects several neighborhoods to downtown. Ridership activity is reasonably consistent across the route, with higher levels of boardings and alightings at major north-south streets.

In terms of performance, Route 6 is very close to the system average on most measures. Its productivity (passengers per revenue hour) ranks third among the 10 weekday routes.

Route 6						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	1,060	6 of 10	41.9	40.9	$1.82	$1.87
Saturday	449	4 of 7	27.7	29.7	$2.76	$2.57



Recommended Service Plan

- Only minor schedule adjustments are recommended for Route 6. These adjustments will improve on-time performance on Route 6.

The impact of this recommendation is shown below. This change increases annual net operating cost by $2,300.

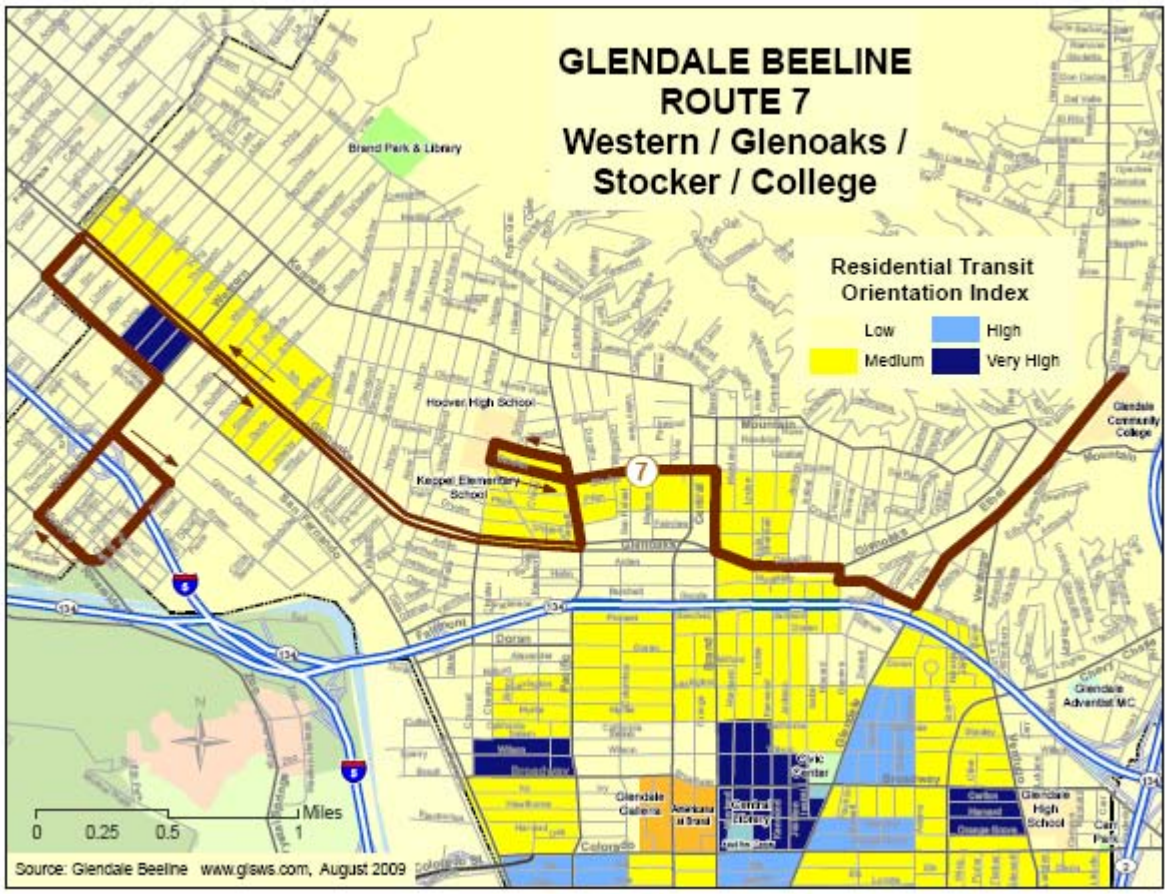
Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	0	$0	$1,479	$1,479	26
Saturday	0	$0	$844	$844	15
Total	0	$0	$2,323	$2,323	40

Route 7 – West Glendale to GCC

Route 7 is one of the longer routes in the Beeline network, stretching east-west from the Burbank-Glendale border to GCC. The primary function of Route 7 is to connect the western part of Glendale with Hoover High School, Toll Middle School, and GCC. Weekday ridership is strong, due primarily to GCC, Hoover High School, and two middle schools along the route. The effects of student ridership can be seen in much lower Saturday ridership, a similar trend to that noted for Route 5. Saturday productivity on Route 7 is the lowest of all Saturday routes. Route 7 has the longest average trip lengths of any Beeline route.

Schedule adherence is poor on weekdays. Additional running time needed in both directions, particularly in the afternoon.

Route 7						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	1,632	3 of 10	41.6	40.9	$1.83	$1.87
Saturday	243	6 of 7	15.4	29.7	$4.96	$2.57



Recommended Service Plan

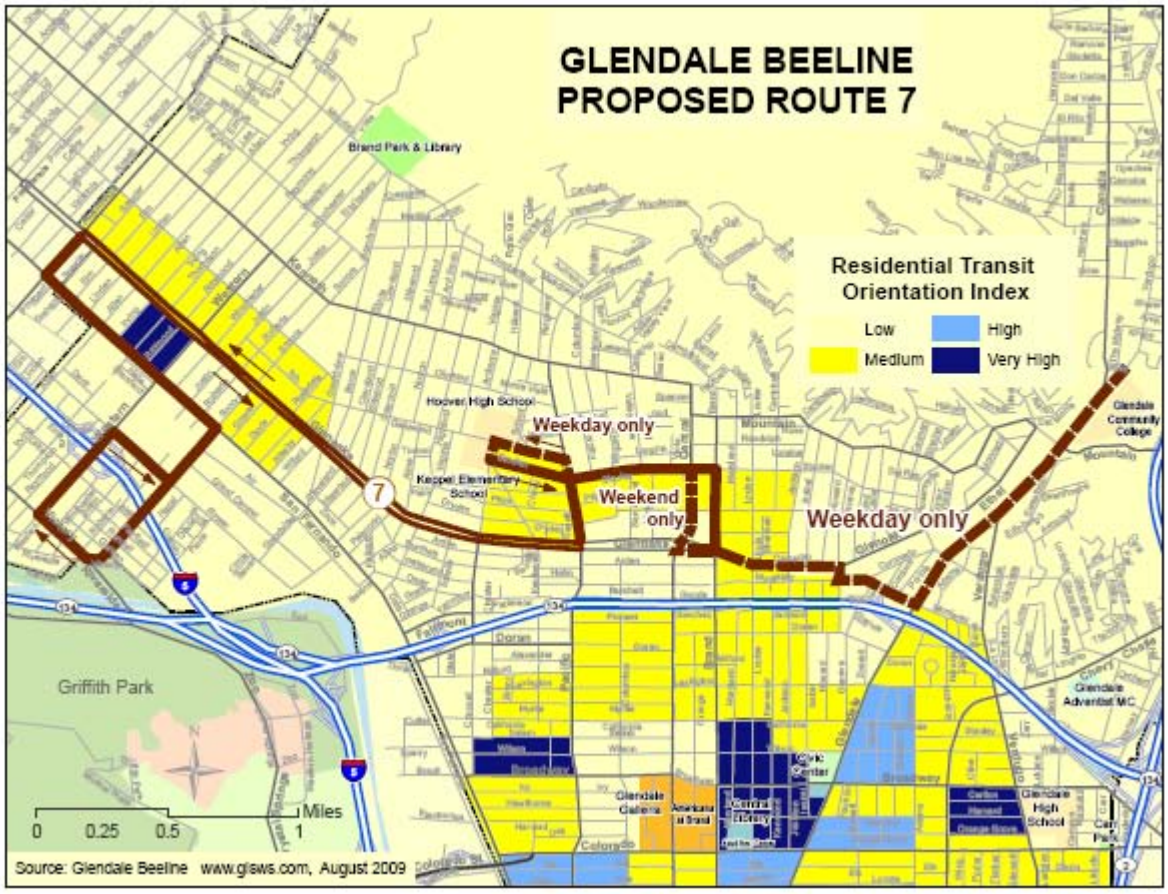
- Operate 30 minute headways on weekdays (now 27 minutes). Along with adjustments to the Route 7 schedule, this change will improve on-time performance on this route.

- Truncate and streamline Saturday service and operate every 60 minutes (now every 40 minutes). Saturday service would not serve Hoover High School and would operate east only to Glenoaks & Brand. This change will allow Route 7 to operate with one bus on Saturday instead of two.

- Reroute to establish a stop at San Fernando & Sonora. Rerouting establishes a connection with Metro Rapid Line 794 at San Fernando & Sonora.

The route changes are highlighted on the map. Impacts of these recommendations are shown below. These recommendations reduce annual net operating cost by $15,000.

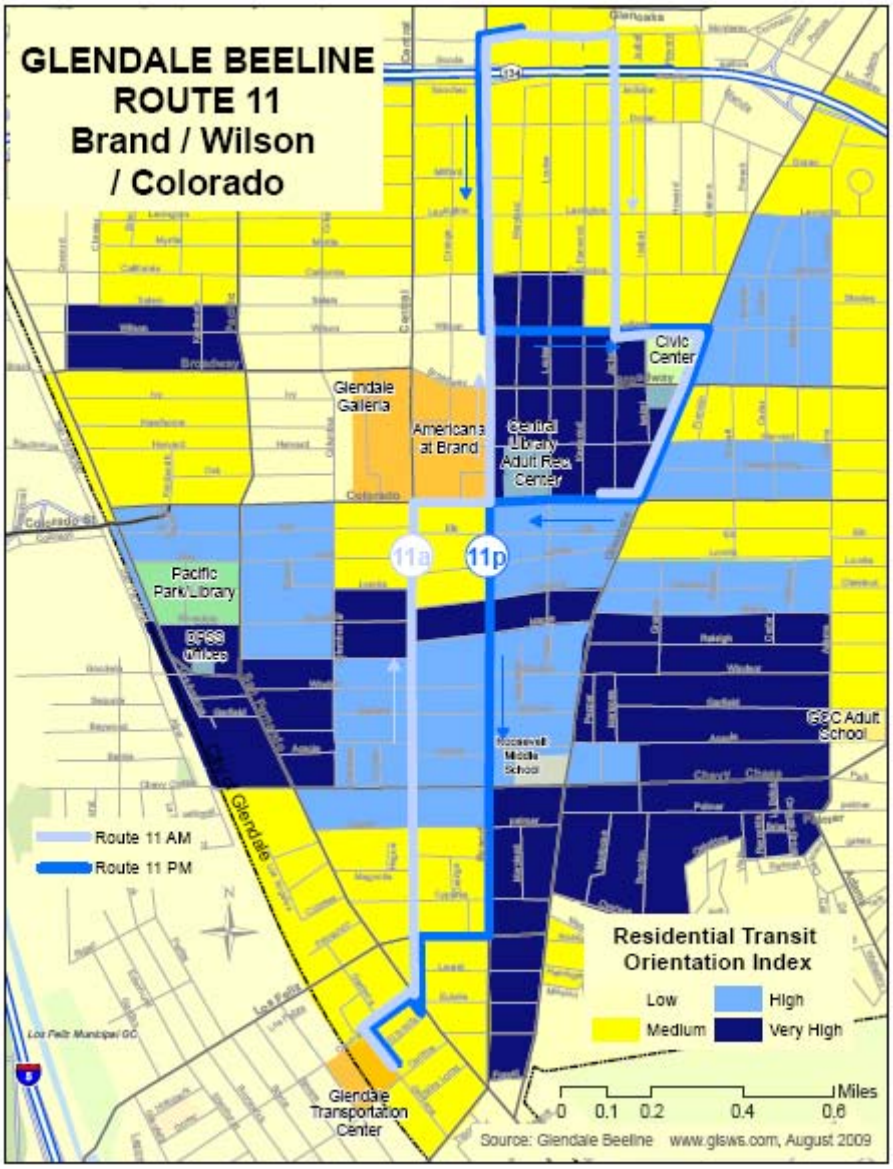
Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	3,924	$706	$8,874	$8,168	153
Saturday	(6,032)	($1,086)	($24,188)	($23,103)	(417)
Total	(2,108)	($379)	($15,314)	($14,935)	(264)



Route 11 – Metrolink Express: Downtown Glendale

The primary function of Route 11 is to provide a timely connection between Metrolink and downtown Glendale for workers in downtown. Ridership is higher on Route 11 than on the other Metrolink Express route (Route 12). Productivity is higher on Route 11 than on some local Beeline routes. A few trips at the shoulders of the peak periods do not carry many passengers.

Route 11						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	389	8 of 10	33.4	40.9	$2.28	$1.87



Recommended Service Plan

- Discontinue the first afternoon trip at 2:48 p.m., which carries only four passengers. Routes 1 and 2 provide an alternative to GTC in the early afternoon.

- Change trip times to allow at least two minutes for train to bus connections in the morning and at least seven minutes for bus to train connections in the afternoon.

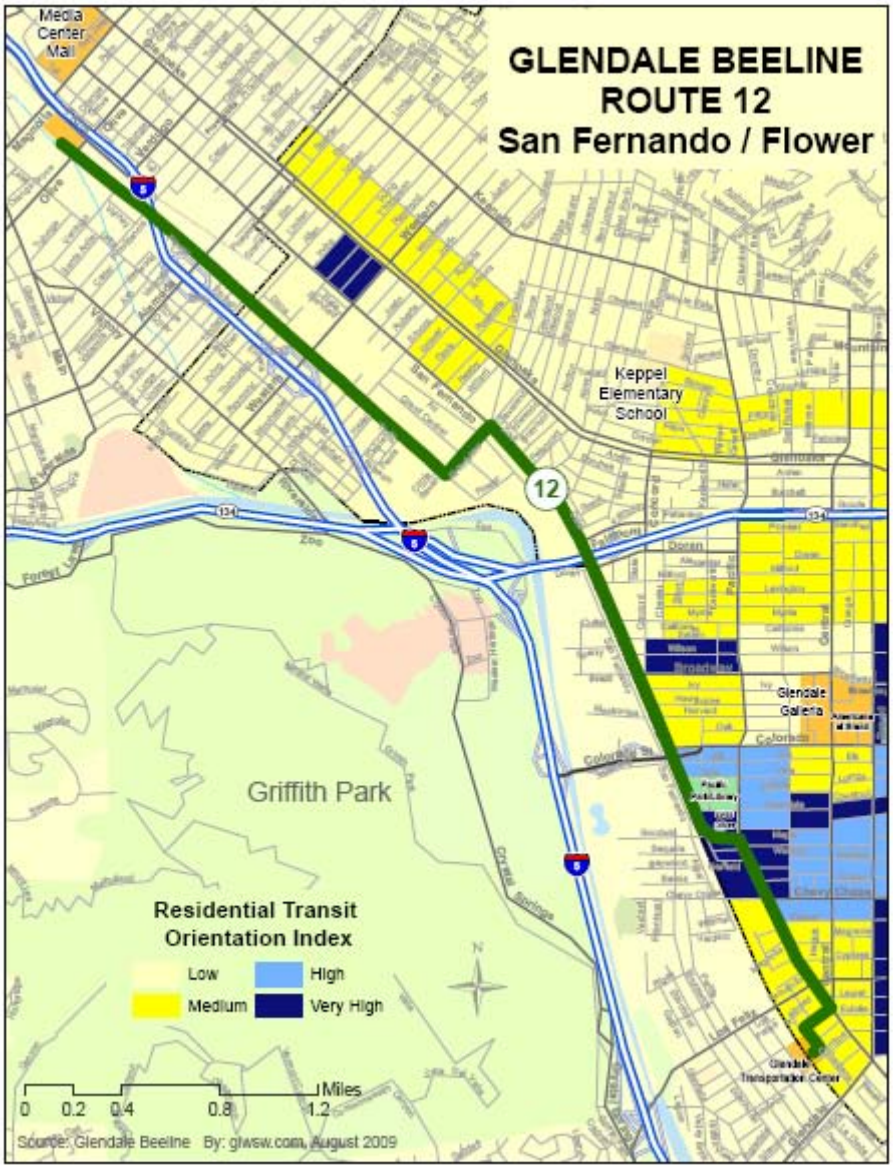
Impacts of these recommendations are shown below. These changes reduce annual net operating cost by $9,000

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	(510)	($274)	($9,614)	($9,340)	(166)

Route 12 – Metrolink Express: Glendale – Burbank

The primary function of Route 12 is to serve employment sites along the San Fernando/Flower corridor extending through Glendale and Burbank. Route 12 is challenging to schedule because it meets trains at both the GTC and the Burbank Regional Intermodal Transit Center (BRITC). Two-way service during both peak periods and lower ridership result in lower productivity than on Route 11, the other express route. A few trips at the shoulders of the peak periods do not carry many passengers.

Route 12						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	368	9 of 10	15.9	40.9	$4.81	$1.87



Recommended Service Plan

- Discontinue one afternoon trip to BRITC (at 2:50) and two afternoon trips to GTC (at 2:42 and 3:21). Combined, the trips proposed for discontinuation carry only one passenger on a typical day.

- Change trip times to allow at least two minutes for train to bus connections in the morning and at least seven minutes for bus to train connections in the afternoon.

- Pull out Route 12 buses early to operate trips on local routes to alleviate school-related overcrowding. The impacts of these school trippers have been included on Routes 3 and 5.

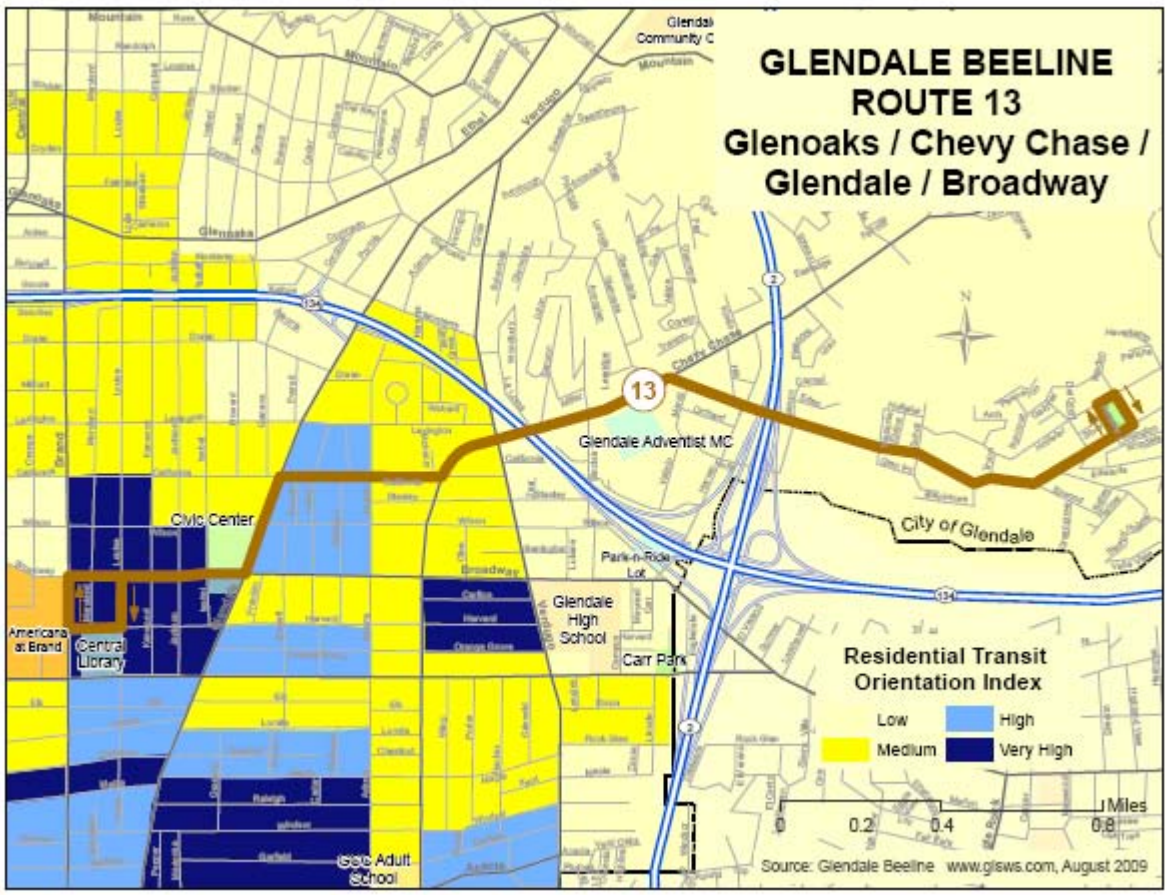
Impacts of these changes are shown below. These recommendations reduce annual net operating costs by $47,000.

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	(255)	($137)	($46,786)	($46,649)	(807)

Route 13 – Downtown to Glenoaks Canyon

The function of Route 13 is to provide service to the Glenoaks Canyon area of Glendale. The route is not well utilized: weekday ridership on Route 13 is 41 riders per day, lower than on any other Beeline route. Most riders are served by other routes: only six boardings and 12 alightings occur east of SR 2. Productivity is also the lowest of any Beeline route at 13.4 boardings per revenue hour. This is below the proposed standard of 15 boardings per revenue hour, and is the lowest of any route in the Beeline system.

Route 13						
Day	Daily Riders	Ridership Rank	Pax Per Hour	System Average	Cost Per Pax	System Average
Weekday	41	10 of 10	13.4	40.9	$5.68	$1.87



Recommended Service Plan

- Discontinue Route 13 due to low ridership and productivity. Only six boardings and 12 alightings occur east of SR 2; most current riders can use Beeline Route 3 or Metro Line 201. The fully allocated cost per rider on this route is $5.68, more than three times the systemwide average. The resources used on Route 13 can be used more productively elsewhere in the Beeline system.

The impact of this recommendation is shown below. Discontinuation of Route 13 reduces annual net operating costs by $42,000.

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Weekday	(10,455)	($1,882)	($44,370)	($42,488)	(765)

Impacts of Route Recommendations

Table ES.9 summarizes the daily impacts of all route recommendations on ridership and revenue.

Table ES.9
Daily Ridership and Revenue Impacts of Route Recommendations

Route	Recommendation	Daily Impacts on					Peak Vehicle Requirements
		Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours	
Short-Term Recommendations							
1 and 2 weekday	15 minute service on Brand; 30-minute service on Central to Doran	9	$2	($12)	($13)	(0.20)	0
1 and 2 Saturday		114	$20	$398	$378	6.87	1
1 and 2 Sunday		62	$11	$398	$387	6.87	1
3 Weekday	Truncate half of all trips at GCC; add p.m. trip ; move LCF express to pm	(266)	($48)	($1,447)	($1,399)	(24.95)	(2)
3 Saturday	Running time changes	0	$0	($35)	($35)	(0.61)	0
4 Weekday	15 minute service plus extension west on B'way to San Fernando Rd	500	$90	$726	$636	12.52	1
4 Saturday		236	$42	$440	$397	7.58	1
4 Sunday		181	$33	$440	$407	7.58	1
5 Weekday	20 minute service plus tripper	12	$2	$27	$24	0.46	0
5 Saturday	40 minute service	0	$0	$2	$2	0.03	0
6 Weekday	Running time changes	0	$0	$6	$6	0.10	0
6 Saturday		0	$0	$16	$16	0.28	0
7 Weekday	30/60 minute service weekdays/ Saturday; truncated route Saturday	15	$3	$35	$32	0.60	0
7 Saturday		(116)	($21)	($465)	($444)	(8.02)	(1)
11 Weekday	Discontinue 1 trip; trip time changes	(2)	($1)	($38)	($37)	(0.65)	0
12 Weekday	Discontinue 3 trips; trip time changes	(1)	($1)	($183)	($183)	(3.16)	0
13 Weekday	Discontinue	(41)	($7)	($174)	($167)	(3.00)	(1)
Total Short-term Weekday		227	$40	($1,060)	($1,100)	(18.28)	(2)
Total Short-term Saturday		234	$42	$356	$313	6.13	1
Total Short-term Sunday		242	$44	$838	$794	14.45	2

Notes: Ridership estimated using: Service elasticity of +0.6 for current service except half of actual ridership on Route 11 and 12 trips eliminated and all of Route 13 ridership.
Route 3 elasticity calculations use only boardings between GCC and Foothill & Castle
Revenue estimated using current average fare for Beeline($0.180 for local and $0.537 for express)
Operating cost calculated using marginal cost of $58.00 per hour

Table ES.10 summarizes annual ridership and revenue impacts of the route recommendations. **These changes are expected to increase Beeline ridership while reducing system costs by over $200,000 per year.**

Table ES.10
Annual Ridership and Revenue Impacts of Route Recommendations

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Total Weekday	58,004	$10,168	($270,361)	($280,529)	(4,661)
Total Saturday	12,151	$2,187	$18,488	$16,301	319
Total Sunday	12,597	$2,268	$43,581	$41,314	751
Annual Total	**82,752**	**$14,622**	**($208,292)**	**($222,914)**	**(3,591)**

Consideration of New Services

Several expansion alternatives have been requested over the past few years for the Beeline and have been considered in this Line-by-Line analysis. The requests are identified and evaluated in Chapter 8 of the report, and none of these requests is recommended for implementation at this time. A summary of the evaluation of new services is provided here.

- Adams Hill. The streets in this neighborhood are narrow and winding, so the only operationally feasible option would be to continue south into the City of Los Angeles and return via Verdugo, Acacia, and Chevy Chase. A deviation of this length on Route 4 would significantly increase travel times for existing through riders in this area and require two additional buses. A neighborhood circulator would be a less expensive option (12 added daily revenue hours versus 24 for the deviation on Route 4), but would likely be the least productive route in the system given neighborhood demographics. Given limited operating and capital budgets for transit, the circulator concept is not a practical short-term recommendation. The City may decide to consider the concept in the future, but by their very nature circulators cannot achieve the ridership and productivity of regular Beeline routes.

- Glenoaks Canyon. Much of Glenoaks Canyon is currently served by Beeline Route 13, proposed for discontinuation due to low ridership and productivity. Transit orientation in this neighborhood is low. The topography of the canyon limits the service area for any transit route along Glenoaks Boulevard. This is a contributing factor to Route 13's poor performance, since it does not have a larger area from which to attract riders due to topographic constraints.

- Chevy Chase Canyon. Chevy Chase Canyon is very similar to Glenoaks Canyon. Given the demographic and topographic similarities and the low transit orientation in this neighborhood, any route in Chevy Chase Canyon could be expected to perform about as well as Route 13, which has been proposed for discontinuation. This study does not recommend service to Chevy Chase Canyon.

- Northwest Glendale. This area previously was served by Metro Line 183, but Metro rerouted this line and the area is currently unserved. The RTOI shows medium transit orientation north of Glenoaks Boulevard and west of Grandview Avenue; the remainder of the area has low orientation toward transit. An option to reroute Beeline Route 7 along Kenneth instead of Glenoaks was not recommended due to low transit orientation along Kenneth and the impact on walk distance to the bus for Hoover High and GCC students living south of Glenoaks. Beeline service in northwest Glendale should be considered as a long-range option, and would make the most sense in the event that the Beeline assumes operation of Metro Line 183.

- Far North Glendale. This neighborhood is hilly, making access to existing service along Foothill Boulevard difficult. Transit orientation is low. An alternative to extend the LCF shuttle to provide a through route along Foothill Boulevard between Far North Glendale and Pasadena, also serving JPL was considered. This is an intriguing concept to enhance Foothill Boulevard service and to serve Far North Glendale, but given the cost it is best considered as a longer-range option.

- Downtown Montrose. A proposal to operate a Downtown Montrose trolley service is theoretically appealing but is unlikely to attract sufficient ridership for two reasons. The first is that there are no "anchors" for such service other than the shops along Honolulu; there are no residential areas of sufficient density nearby to generate ridership to and from Downtown Montrose. The second is that the amount of parking appears to be more than generous. This takes away a primary incentive to use a trolley. The combination of an unclear market for this service and ample parking availability suggests that a Downtown Montrose trolley would not attract sufficient ridership to justify the capital and operating expense involved.

- "Buzz" Service along Brand Boulevard. The previous Beeline short-range transit plan proposed "The Buzz," a new service along Brand Boulevard that would utilize distinctive buses, improved stops and amenities, free service in the core of Downtown (between Colorado and Glenoaks), and 15-minute service. The recommendation for Routes 1 and 2 modifies these routes to achieve 15-minute headways along Brand within existing funding, but to achieve the needed efficiencies, the two routes would use the same buses. The recommendation is to test rider reaction to the 15-minute headway recommended along Brand Boulevard and then to evaluate whether a separately branded service is needed. A separately branded service would increase operating cost between $300,000 and $600,000 annually, depending on the frequency of service. This estimate does not include the capital cost of purchasing new vehicles.

- Holiday Shuttle along Brand Boulevard. A Downtown Glendale Parking Shuttle demonstration project was conducted in May and June 2008 in conjunction with the opening of Americana at Brand. A total of 621 revenue hours of service were operated during May and June. Ridership for the two months was 1,048, resulting in a productivity figure of 1.69 boardings per revenue hour. This extremely low productivity resulted in termination of the demonstration project. It may be argued that the holiday season would be more conducive to a parking shuttle. However, anticipated gridlock with the opening of Americana at Brand provided ample motivation for passengers to use the shuttle. It is unlikely that a holiday shuttle would generate sufficient ridership and productivity to justify the service.

- South Glendale Avenue. Unlike several other unserved areas in Glendale, the neighborhoods along South Glendale Avenue show a high orientation toward transit. While there are no major unserved destinations in this area, it does appear to be promising territory for transit. The major argument against Beeline service on South Glendale Avenue is duplication with the frequent service on Metro Line 90/91 (every six to eight minutes in the morning peak, every 12 minutes in the afternoon peak). Weekday ridership totals on Metro Line 90/91 along South Glendale Avenue south of Colorado Street are 737 boardings and 692 alightings, indicating that this is a strong transit segment. To overlay Beeline service on frequent and heavily used Metro lines is difficult to justify, particularly when the cost is considered: a connection between South Glendale Avenue and downtown would require at least 24 daily revenue hours of service.

- Parks Route. A weekend route connecting the various parks in Glendale is another appealing concept at first glance that becomes operationally challenging. Many of the parks are accessible by regular Beeline routes; others are deemed impossible to serve

because of topographic and operational constraints. While an interesting idea, the parks route cannot be recommended due to operational concerns, cost, and uncertain usage.

Additional Cost-Cutting Alternatives

The recommended actions in this report are expected to result in a net operating cost reduction of $288,000, as noted above in Table ES-10. There are additional options that have not been recommended but that could be implicated in the event of a more serious revenue budget shortfall. Table ES-11 shows these options, which include cutting out early and late trips on most routes that are lightly utilized, reducing service on Routes 1 and 2 to every 30 minutes, and discontinuing Saturday service on Routes 5 and 7. These options would result in an additional net operating cost reduction of $341,000 above and beyond the $223,000 reduction in cost from the recommended options.

Table ES-11
Annual Impacts of Additional Options

Day	Annual Impacts on				
	Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
1 and 2 weekday	(56,445)	($10,160)	($198,383)	($188,223)	(3,420)
1 and 2 Saturday	(5,846)	($1,052)	($21,715)	($20,663)	(374)
1 and 2 Sunday	(4,027)	($725)	($21,715)	($20,990)	(374)
3 Weekday	(383)	($69)	($13,065)	($12,996)	(225)
3 Saturday	(182)	($33)	($1,206)	($1,174)	(21)
4 Weekday	(1,148)	($207)	($8,381)	($8,174)	(145)
4 Saturday	0	$0	$0	$0	0
4 Sunday	0	$0	$0	$0	0
5 Weekday	(1,020)	($184)	($3,944)	($3,760)	(68)
5 Saturday	(11,752)	($2,115)	($24,671)	($22,556)	(425)
6 Weekday	(4,080)	($734)	($18,488)	($17,753)	(319)
6 Saturday	(312)	($56)	($905)	($849)	(16)
7 Weekday	(1,530)	($275)	($22,136)	($21,860)	(382)
7 Saturday	(6,604)	($1,189)	($23,314)	($22,125)	(402)
11 Weekday	0	$0	$0	$0	0
12 Weekday	0	$0	$0	$0	0
13 Weekday	0	$0	$0	$0	0
Total Weekday	(64,605)	($11,629)	($264,396)	($252,767)	(4,559)
Total Saturday	(24,696)	($4,445)	($71,811)	($67,366)	(1,238)
Total Sunday	(4,027)	($725)	($21,715)	($20,990)	(374)
Annual Total	**(93,327)**	**($16,799)**	**($357,922)**	**($341,123)**	**(6,171)**

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Glendale Beeline
2009 Line-by-Line Analysis
Chapter 1: Introduction

1.0 Background and Purpose of This Study

Glendale Beeline is one of two major public transportation providers in the City of Glendale and surrounding areas. Beeline operates eight local fixed-route bus routes and two Metrolink express routes. From its origins in Glendale, Beeline's service area now extends to La Cañada Flintridge and parts of Montrose and La Crescenta.

The Beeline carries approximately 13,000 riders on a typical weekday, 3,300 riders on Saturday, and 1,300 riders on Sunday. Figure 1.1 displays a map of the route network. The City of Glendale operates the Beeline through its service contractor, MV Transportation.

The City of Glendale is in a transit-rich environment, served not only by Beeline routes but also by services operated by Metro and Los Angeles Department of Transportation (LADOT), with connections to Pasadena ARTS and Burbank Bus service. Metro is the most important system in terms of regional service coordination because of the sheer volume of Metro service within Glendale. Figure 1.2 shows the entire transit network, including Beeline, Metro, and other services, within the Glendale area.

This Line-by-Line Analysis of Beeline fixed-route transit services has the following objectives:

- Gather current service and patronage data to assist in evaluating current performance and planning future service;
- Assess systemwide operating ridership and performance of the Beeline and Metro services in Glendale;
- Conduct a detailed analysis of current ridership and performance measures at the route, route segment, time of day, and day of week levels to understand the strengths and weaknesses of the current system;
- Analyze fare payment methods to understand how current riders pay for service and to develop fare policies and options;
- Obtain riders demographics and travel information from an on-board ridership survey to understand who uses the Beeline and why;
- Develop a series of recommendations for Beeline's transit services.

A line-by-line analysis provides a snapshot of a transit system at a given point in time. It involves a substantial data collection effort, analysis that converts the raw data into useful information, and an assessment of potential improvements to the transit network to enhance mobility and efficiency. The recommendations presented in this report will guide transit-related decisions in Glendale over the next several years.

Figure 1.1
Glendale Beeline Route Network

Figure 1.2
Transit Network in the Beeline Service Area

Tables 1.1 and 1.2 provide summaries of service characteristics, including information on span of service and headways by day of the week. Span of service is measured for local service from the start time of the first trip in the morning to the start time of the last trip in the evening. Overall Beeline span of service is 6:00 a.m. to 7:38 p.m. weekdays and 9:00 a.m. to 5:13 p.m. Saturday and Sunday. All tables and figures in this chapter reflect service in operation during the ridecheck in November 2008.

Table 1.1
Beeline Span of Service by Route and Day

Route	Span of Service		
	Weekday	Saturday	Sunday
1	6:10 a.m. – 6:50 p.m.	9:00 a.m. – 4:54 p.m.	9:00 a.m. – 4:54 p.m.
2	6:00 a.m. – 6:40 p.m.	9:00 a.m. – 4:50 p.m.	9:00 a.m. – 4:50 p.m.
3	5:30 a.m. – 7:38 p.m.	9:00 a.m. – 5:06 p.m.	No service
4	6:00 a.m. – 7:00 p.m.	9:00 a.m. – 5:13 p.m.	9:00 a.m. – 5:13 p.m.
5	6:20 a.m. – 6:36 p.m.	9:00 a.m. – 4:51 p.m.	No service
6	6:00 a.m. – 6:36 p.m.	9:00 a.m. – 5:09 p.m.	No service
7	6:00 a.m. – 6:29 p.m.	9:00 a.m. – 4:39 p.m.	No service
11	6:03 – 9:07 a.m. 2:48 – 6:12 p.m.	No service	No service
12	6:03 – 9:41 a.m. 2:42 – 6:10 p.m.	No service	No service
13	7:15 a.m. – 5:10 p.m. (five trips)	No service	No service

Table 1.2 presents headways by time of day and day of week. Route 3 has additional service (the LCF Shuttle and LCF Express) on the Foothill Boulevard route segment in La Cañada Flintridge.

Trips were assigned to a time period based on the scheduled start time. Time periods are defined as:

AM Peak	6:00 to 8:59 a.m.
Midday	9:00 a.m. to 2:59 p.m.
PM Peak	3:00 to end of service

Table 1.2
Beeline Service Headways by Route, Day, and Time Period

Route	Span of Service				
	Weekday			Saturday	Sunday
	AM Peak	Midday	PM Peak		
1	20	20-30	20-30	20-30	20-30
2	20	20-25	15-20	20-30	20-30
3	15-20	15-25	15-25	10-33	--
4	16-26	16-26	16-24	20-36	20-36
5	20-29	20-29	20-28	39-49	--
6	20-30	20-30	20-30	20-31	--
7	27-37	27-34	21-36	40-50	--
11	13-46	--	7-35	--	--
12	7-46	--	5-53	--	--
13	2 trips	1 trip	2 trips	--	--

Note: Additional service (LCF Shuttle and LCF Express) operates on Route 3 in La Cañada Flintridge on weekdays

1.1 Ridership Counts and On-Board Survey

On-board personnel gathered ridership data via ride checks during November 2008. Weekday counts were undertaken on Tuesday, Wednesday, and Thursday only (November 4 through 13); no checks were conducted on Monday or Friday. Saturday counts were conducted on November 1 and 8, and Sunday counts on November 2 and 9. Primary data collection was completed on November 11, with subsequent days used to make up any missed assignments. Checkers counted boardings, alightings, and passenger loads and noted times at timepoints.

The on-board survey, designed to collect information on travel patterns, passenger demographics, and ratings of various service elements, was conducted in November 2008 in conjunction with the ridecheck. Surveys were distributed starting on November 4 (to focus on weekday travel) and continued through November 13.

1.2 Organization of This Report

Following this introductory chapter, Chapter 2 presents detailed route profiles of each Beeline route, including an overview, route description, schedule, boardings, alightings, peak load point by time of day, capacity issues (if any), performance measures (broken down by line segment and time of day), schedule adherence, running time, and summary findings. Detailed charts and graphs are included for each route in this chapter and Appendix A. Chapter 3 includes passenger mile data calculated from ridecheck data for each route.

Chapter 4 presents the results of the fare analysis. Chapter 5 summarizes the findings of the on-board survey. Chapter 6 discusses Metro routes and other services that operate in Glendale and opportunities for enhanced coordination of regional services. Chapter 7 analyzes latent and future demand estimation, using techniques that identify neighborhoods with a high propensity to use transit and describe journey to work patterns for area residents.

Chapter 8 identifies route options and presents the recommended service plan for the Glendale Beeline. The chapter also provides a series of service options that could result in maximize service efficiency and decreased operating costs.

Chapter 9 addresses Beeline service in La Cañada Flintridge. The City of La Cañada Flintridge provides funding to the Beeline to operate transit services within its borders. This final chapter summarizes proposed changes that specifically affect La Cañada Flintridge.

Glendale Beeline
2009 Line-by-Line Analysis
Chapter 2: Route Profiles

2.0 Introduction

Chapter 2 presents the ridership and productivity analysis of the November 2008 ridecheck. This evaluation includes an analysis of ridership by route, direction, time of day, and route segment. Route effectiveness or productivity, measured by boardings per revenue hour, is also considered by direction, route segment, and time of day. Route efficiency is analyzed in terms of subsidy per boarding and farebox recovery ratio (the ratio of operating revenue to operating cost) at the route level. Schedule adherence is also analyzed, along with actual versus scheduled running times by route, direction, time of day, and segment.

Section 2.1 summarizes findings related to ridership, productivity, levels of service, and cost efficiency at the route level. Section 2.2 contains route profiles. These profiles report frequency, span of service, operating and performance data, financial data, and detailed route segment ridership and productivity for each Beeline route, including:

- Route description, including major corridors and destinations and trip patterns;
- Schedule, including days of operation, service spans, and frequency;
- Operating and productivity data, including ridership, revenue hours, passengers per revenue hour, and average trip length;
- Financial data, including revenue, operating cost, cost per passenger, subsidy per passenger, and farebox recovery ratio;
- Identification of major stops along the route;
- Capacity issues, measured by trip segments with loads exceeding 125 percent of seated capacity;
- Passenger boardings and productivity (passengers per revenue hour) by route segment;
- Peak and maximum load points along the route;
- Schedule adherence;
- Average versus scheduled running time overall and by route segment;
- Assessment of route performance and trends.

Appendix A *Ridecheck Results* (under separate cover) provides all the data collected during the ridecheck in voluminous detail, including ons and offs by stop for each trip and times at each timepoint for each trip. As with any data collection effort, the data can be used in answering all types of questions that will arise regarding Beeline service. Appendix B *Stops with Loads over 125 Percent of Capacity* provides a list of all stops/trips experiencing a load in excess of 125 percent of capacity. This is a convenient summary of overcrowded trips.

2.1 Overall Findings

Table 2.1 presents ridership by route for weekdays, Saturday, and Sunday. Route 3 Galleria/ College/JPL has the greatest weekday ridership, with almost 4,000 boardings per weekday. Route 4 Chevy Chase/Broadway/Galleria is second in terms of weekday ridership (over 2,500 boardings per weekday) and leads in Saturday and Sunday ridership. Other all-day routes have ridership in the range of 1,000 to 1,600 boardings per day. Routes 11 and 12 are express routes serving the Metrolink station at Glendale Transportation Center and operate in the a.m. and p.m. peak periods only, with schedules timed to meet Metrolink trains. Route 13 Downtown

to Glenoaks Canyon operates only five trips in each direction during the day. On an annualized basis, Beeline ridership is 2.82 million, with 2.67 million on local routes and 0.15 million on the express routes.[1]

Table 2.1
Beeline Average Daily Ridership by Route and Day of Week

Route	Weekday		Saturday		Sunday	
	Riders	Rank	Riders	Rank	Riders	Rank
1	998	7	438	5	305	3
2	1,107	4	486	3	348	2
3	3,930	1	648	2	--	--
4	2,560	2	843	1	646	1
5	1,102	5	226	7	--	--
6	1,060	6	449	4	--	--
7	1,632	3	243	6	--	--
11	389	8	--	--	--	--
12	368	9	--	--	--	--
13	41	10	--	--	--	--
Total	**13,187**	--	**3,333**	--	**1,299**	--
Local Routes	**12,430**	--	**3,333**	--	**1,299**	--
Express Routes	**757**	--	**--**	--	**--**	--

Source: Ridecheck Data, November 2008

Table 2.2 shows service effectiveness in terms of passenger boardings per revenue hour, a common measure of productivity in the transit industry. Route 4 Chevy Chase/Broadway/Galleria is the most productive route on all days, with over 67 boardings per revenue hour on weekdays, over 50 on Saturday, and almost 40 on Sunday. Not surprisingly, productivity is highest on weekdays and lowest on Sunday. Routes with the lowest productivity are Route 13 Downtown to Glenoaks Canyon (13.4) and Route 12 Metrolink Express San Fernando Corridor (15.9). On an annualized basis, overall productivity is 36.5 passenger boardings per revenue hour.

As a general rule of thumb in assessing service effectiveness by means of passenger boardings per revenue hour, 40 indicates a good route, 20 is acceptable for a community route, and anything below 15 is a red flag to examine the route more closely and restructure, reduce span of service or cancel service.

[1] Route totals were annualized by multiplying weekday ridership by 255 weekdays per year, Saturday ridership by 52 Saturdays per year, and Sunday ridership by 52 Sundays per year. Beeline service does not operate on six holidays. A seasonal adjustment factor of 0.95656 was applied; this represents the average monthly ridership divided by the November ridership in FY 2008. An adjustment factor for weekday ridership of 0.957835 was applied to weekday ridership to account for lower Monday and Friday ridership (counts were conducted on Tuesday, Wednesday, and Thursday).

Table 2.2
Beeline 2008 Boardings per Revenue Hour by Route and Day of Week

Route	Weekday		Saturday		Sunday	
	B/RH	Rank	B/RH	Rank	B/RH	Rank
1	30.5	8	26.5	6	18.2	3
2	35.9	6	29.6	2	21.1	2
3	41.8	4	28.5	3	--	--
4	67.2	1	51.8	1	39.7	1
5	45.0	2	27.6	5	--	--
6	41.9	3	27.7	4	--	--
7	41.6	5	15.4	7	--	--
11	33.4	7	--	--	--	--
12	15.9	9	--	--	--	--
13	13.4	10	--	--	--	--
Total	40.9	--	29.7	--	26.2	--
Local Routes	43.2	--	29.7	--	2620	--
Express Routes	21.7	--	--	--	--	--

Source: Ridecheck Data, November 2008

Table 2.3 shows overall schedule adherence for each route, as measured at each timepoint on each trip. Schedule adherence is defined as no more than one minute early (to allow for minor variations among watches) and no more than five minutes late at a given timepoint along the route. This detailed measure at each timepoint, a more accurate reflection of how riders view on-time performance, produces results in the 60 to 70 percent range for most transit agencies.

Schedule adherence ranges from a low of 48.7 percent weekdays on Route 7 West Glendale to GCC to a high of 100 percent weekdays on Route 13 Downtown to Glendale Oaks Canyon. More crowded and longer routes usually have more difficulty keeping to schedule, partially explaining the low schedule adherence for Routes 3 and 7. Weekday schedule adherence is 74.9 percent on all routes, and is higher on the two Metrolink express routes (Routes 11 and 12) than on the local routes.

Table 2.3
Beeline Schedule Adherence

Route	Weekday	Saturday	Sunday
1	85.7%	81.7%	84.4%
2	82.0%	73.9%	74.1%
3	67.4%	68.9%	--
4	71.8%	78.6%	86.6%
5	92.6%	80.8%	--
6	65.2%	88.0%	--
7	48.7%	79.0%	--
11	90.5%	--	--
12	83.7%	--	--
13	100.0%	--	--
Total	74.9%	78.9%	82.0%
Local	73.4%	78.9%	82.0%
Express	85.2%	--	--

Source: Ridecheck Data, November 2008

Generally speaking, schedule adherence is better on weekends than on weekdays due to less traffic congestion. This trend holds true in Glendale, with overall schedule adherence at 79 percent on Saturday and 82 percent on Sunday. Route 6 leads on Saturday with 88 percent on-time, much higher than its weekday percentage. Route 4 leads on Sunday with 87 percent. Interestingly, schedule adherence is lower on weekends for Routes 1 and 2, possibly due to retail activity in Downtown Glendale.

2.2 Route Profiles

The following pages contain much greater detail for the individual routes. Each route profile includes a description of the route, headway and span of service, passenger boardings, revenue hours of service, overcrowded segments, stops with major passenger activity, financial data, segment and time of day analysis, schedule adherence, and running time analysis. Overcrowded segments are defined as segments on a given trip with passenger loads over 125 percent of seated capacity. Beeline operates different-sized buses on different routes, so separate calculations of 125 percent of seated capacity are made for each route.

Each route profile also includes a route map overlaid with the Residential Transit Orientation Index (RTOI). Chapter 7 of this report explains the RTOI in greater detail, but it is designed to measure the orientation toward transit use based on demographic characteristics such as income, zero-vehicle households, percent elderly, percent youth, and population density. Dark blue on the maps indicates census block groups with very high transit orientation and light blue indicates high transit orientation. The RTOI is an important tool to identify neighborhoods where transit use is most likely to occur.

All operating data are taken from the ridecheck results. Cost calculations are based on the budgeted cost per revenue hour for FY 2009 ($76.29). Revenue calculations are based on the most recent revenue per passenger boarding figure of $0.18 for local service and $0.537 for Metrolink express service.[2]

The route profiles provide information regarding passengers per revenue hour, a key performance variable used in evaluating transit routes. Financial performance indicators include subsidy per passenger boarding and farebox recovery ratio (operating revenue divided by operating cost). The final section of each route profile summarizes findings and issues for the route, but does not include route recommendations. Recommendations are developed and presented in Chapter 8.

[2] Revenue per passenger boarding is below the base fare of 25 cents because the elderly and passengers with disabilities pay only 15 cents and passengers transferring from Metro pay with an interagency (Metro to Muni) transfer or MTA pass, neither of which provide cash to the Beeline.

Route 1 GTC/Central/Brand
Route 2 GTC/Brand/Central

Overview

Route 1 GTC/Central/Brand (Figure 2.1) and Route 2 GTC/Brand/Central (Figure 2.2) serve the Brand Boulevard and Central Avenue corridors through downtown Glendale. The routes travel between the Glendale Transportation Center (GTC) and Stocker Street north of CA 134. Route 1 travels in a clockwise direction (north on Central and south on Brand) and Route 2 travels in a counter-clockwise direction (north on Brand and south on Central). Major destinations include The Glendale Galleria, Americana at Brand, other stores and offices in downtown, Glendale Memorial Hospital and Health Center, and GTC.

The primary function of both routes is to serve the Brand and Central commercial and retail corridors in and near downtown. Neither route serves residential areas of the City outside of downtown. A secondary function is to connect downtown with the GTC throughout the day and on weekends. Another route (Metrolink Express Route 11) is specifically designed to meet every train and provide convenient connections between GTC and downtown in peak hours. Brand & Broadway is the busiest stop in terms of passenger activity on both routes.

Individually, Routes 1 and 2 rank in the middle to the bottom among Beeline routes in terms of ridership and productivity. If the two routes are considered as a single route, then the combined Routes 1 and 2 would rank 3rd on weekdays and 1st on Saturday and Sunday in ridership but productivity would still be below the system average because of high service levels (every 20 minutes) on both routes.

The routes are interlined throughout the day, and serve the same route in opposite directions, so it is logical to analyze them jointly. Statistics have been aggregated separately for each route and are presented here in this section.

Headway and Span of Service

Table 2.4 shows headways for Routes 1 and 2 by day of the week. Table 2.4 also indicates the span of service on the routes. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening.

Table 2.4
Routes 1 and 2 Headways and Spans of Service

Day of Week	Route	Headway (minutes)	Span of Service
Weekday	1	20-30	6:10 a.m. – 6:50 p.m.
	2	15-25	6:00 a.m. – 6:40 p.m.
Saturday	1	20-30	9:00 a.m. – 4:54 p.m.
	2	20-30	9:00 a.m. – 4:50 p.m.
Sunday	1	20-30	9:00 a.m. – 4:54 p.m.
	2	20-30	9:00 a.m. – 4:50 p.m.

Figure 2.1
Route 1

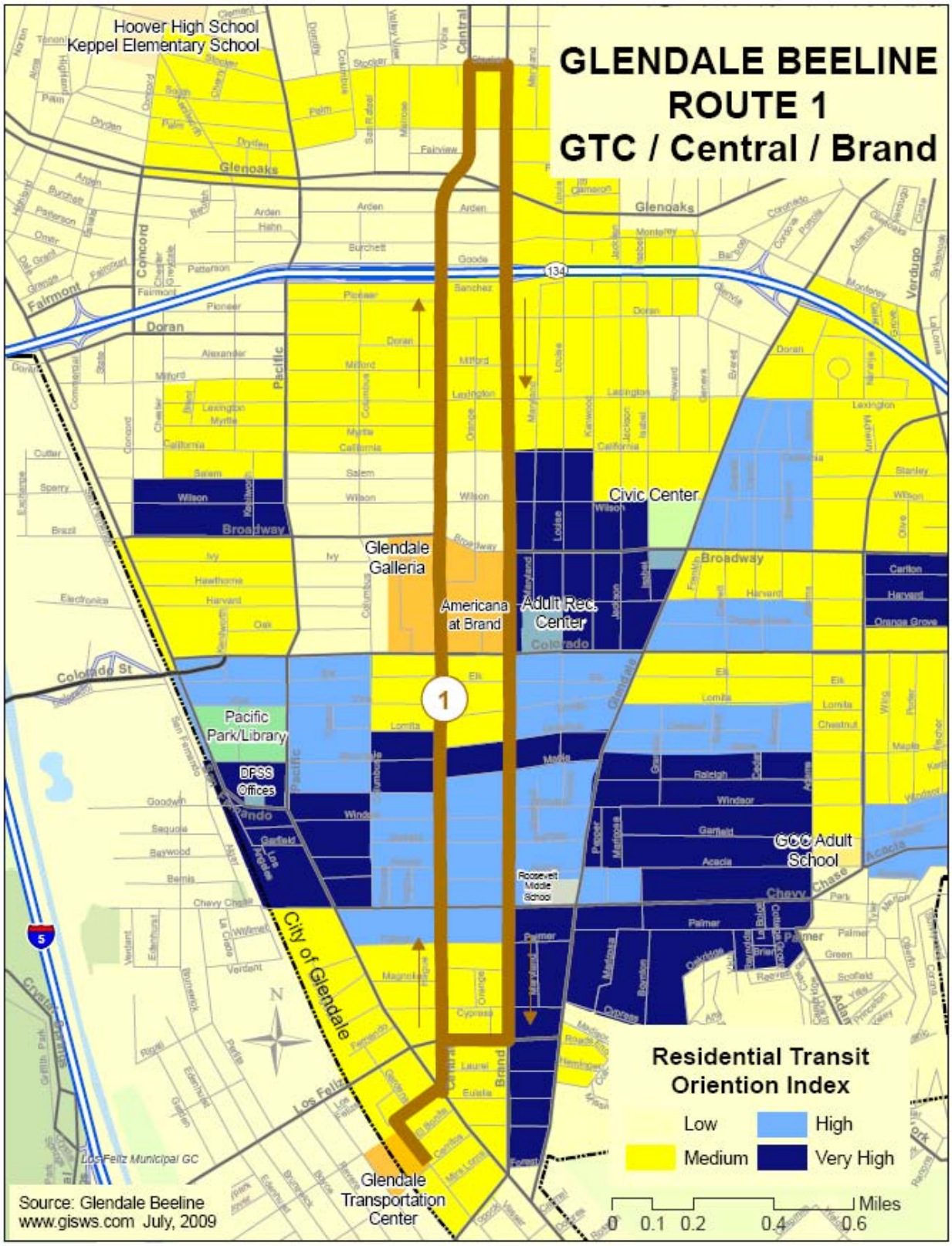
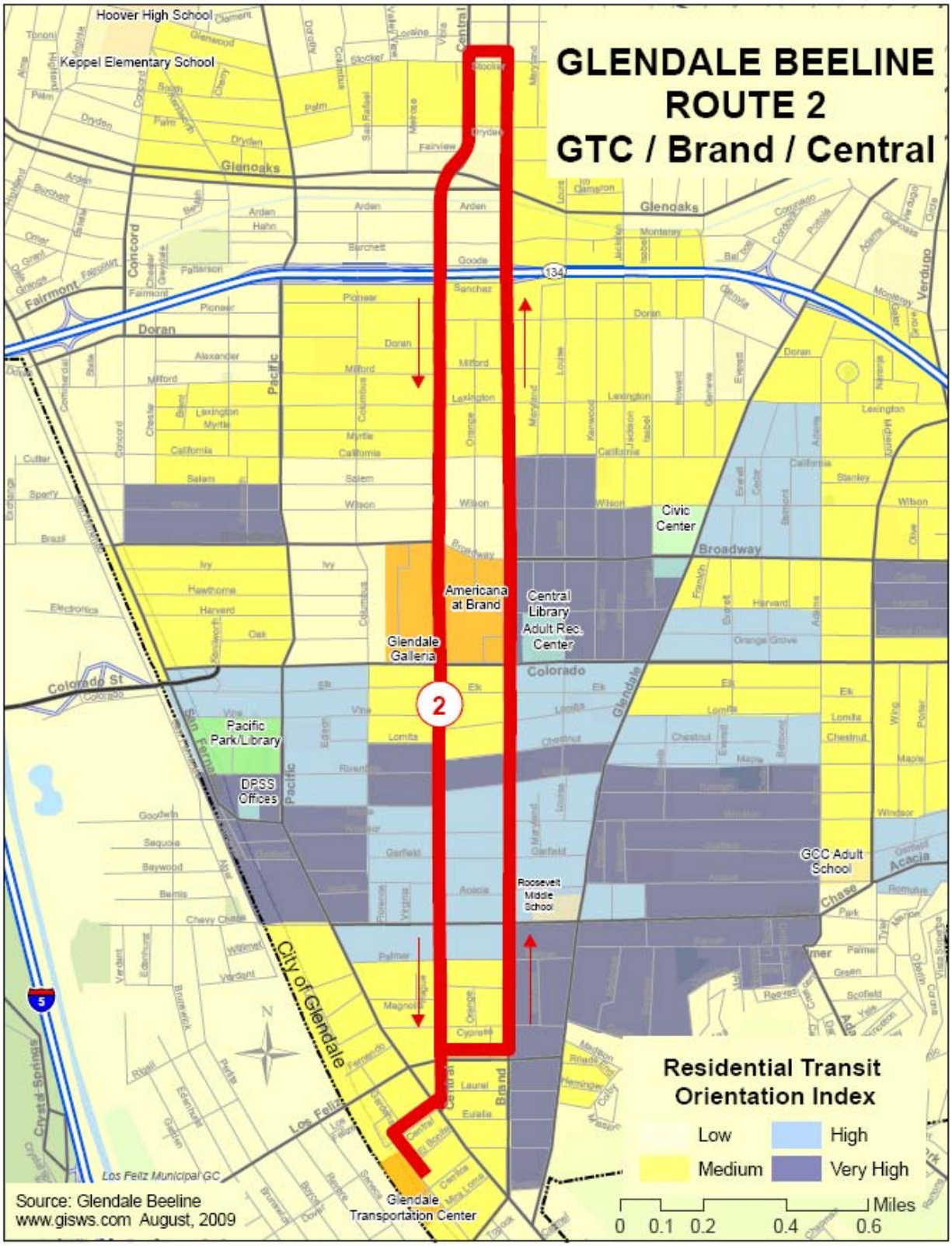


Figure 2.2
Route 2



Operating Data

Table 2.5 presents operating data for Routes 1 and 2. Among the ten weekday routes, Route 1 ranks 7th in boardings and 8th in boardings per revenue hour and Route 2 ranks 4th in boardings and 6th in boardings per revenue hour. Among the seven Saturday routes, Route 1 ranks 5th in boardings and 6th in boardings per revenue hour and Route 2 ranks 3rd in boardings and 2nd in boardings per revenue hour. Among the three Sunday local routes, Route 1 ranks last in boardings and last in boardings per revenue hour and Route 2 ranks 2nd in boardings and 2nd in boardings per revenue hour. Note that revenue hours in Table 2.5 are the actual revenue hours operated on the day of the ridecheck, which may be more or less than the scheduled revenue hours. For example, some trips were missed due to a bus breakdown, and some buses were in service

Route 1 ranks last in average trip length on all days, while Route 2 ranks next-to-last on weekdays and Sunday and 5th on Saturday. Average trip lengths fall in the range of 1.12 to 1.26 miles on all days for Route 1 and in the range of 1.24 to 1.36 miles on all days for Route 2. On both routes, average trip lengths are slightly longer on weekdays.

If considered as a single route, Routes 1 and 2 would rank 3rd among nine weekday routes in ridership, first among six Saturday routes, and first among two Sunday routes. Routes 1 and 2 together would rank 7th in weekday productivity, 3rd on Saturday, and last on Sunday. The reason for the difference in ridership and productivity rankings is the greater level of service on Routes 1 and 2.

Table 2.5
Routes 1 and 2 Operating and Productivity Data

Day of Week	Route	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	1	998	32.7	30.5	1.26
	2	1,107	30.8	35.9	1.36
	1 and 2	2,105	63.5	33.1	1.32
Saturday	1	438	16.5	26.5	1.12
	2	486	16.4	29.6	1.24
	1 and 2	924	32.9	28.1	1.18
Sunday	1	305	16.8	18.2	1.24
	2	348	16.5	21.1	1.26
	1 and 2	653	33.3	19.6	1.25

Source: Ridecheck Data, November 2008

Table 2.6 presents financial data for Routes 1 and 2. Route 1 ranks 8th in subsidy per boarding and 9th in farebox recovery ratio (passenger revenue divided by operating cost) among ten Beeline weekday routes, 6th in both measures among seven Saturday routes, and last in both measures among three Sunday routes. Route 2 ranks 7th in subsidy per boarding and 8th in farebox recovery ratio among ten Beeline weekday routes, 2nd n both measures among seven Saturday routes, and 2nd in both measures among three Sunday routes. Rankings would be similar if the two routes were treated as a single route.

Table 2.6
Routes 1 and 2 Financial Data

Day of Week	Route	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1	998	$180	$2,493	$2.50	$2.32	7.2%
	2	1,107	$199	$2,352	$2.12	$1.94	8.5%
	1 & 2	2,105	$379	$4,846	$2.30	$2.12	7.8%
Saturday	1	438	$79	$1,260	$2.88	$2.70	6.3%
	2	486	$87	$1,251	$2.57	$2.39	7.0%
	1 & 2	924	$166	$2,511	$2.72	$2.54	6.6%
Sunday	1	305	$55	$1,279	$4.19	$4.01	4.3%
	2	348	$63	$1,259	$3.62	$3.44	5.0%
	1 & 2	653	$118	$2,538	$3.89	$3.71	4.6%

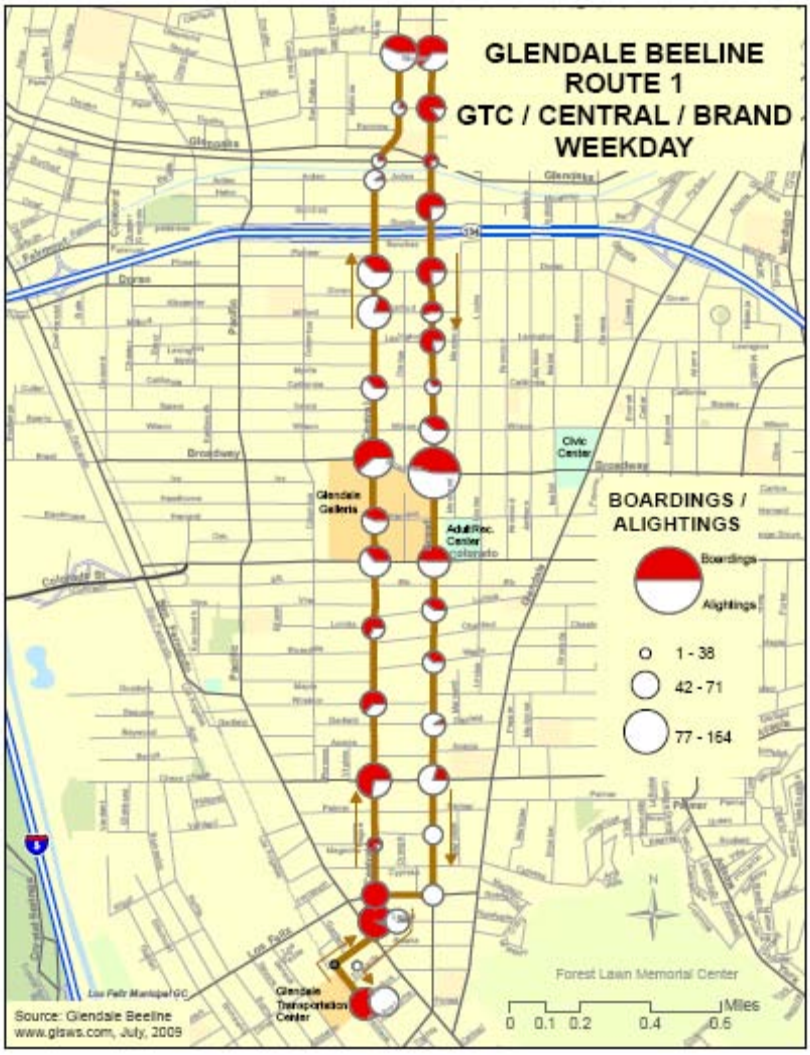
Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figures 2.3 through 2.5 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. The only stop with at least 100 boardings per day in one direction is:

- Brand & Broadway on Route 2 NB (Glendale Galleria, Americana at Brand, transfer point for Beeline Routes 3 and 4 and Metro Lines 92, 180/181, 201, and 794)

There are no trip segments with loads exceeding 125 percent of capacity on Routes 1 and 2.

Figure 2.3
Routes 1 and 2 Weekday Boardings and Alightings by Stop



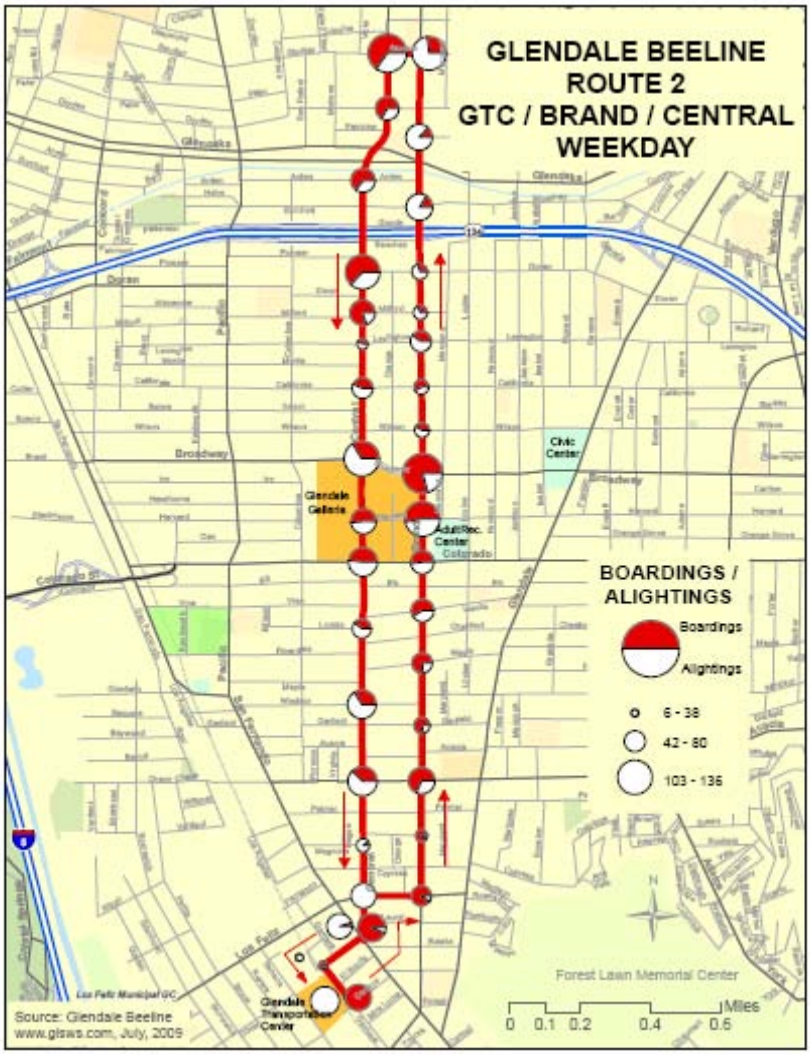

GLENDALE BEELINE
ROUTE 2
GTC / BRAND / CENTRAL
WEEKDAY
BOARDINGS / ALIGHTINGS
Boardings
Alightings
6 - 38
42 - 80
103 - 136
Civic Center
Glendale Galleria
Broadway
Colorado
Forest Lawn Memorial Center
Glendale Transportation Center
Miles
0 0.1 0.2 0.4 0.6
Source: Glendale Beeline
www.glaws.com, July, 2009

Figure 2.4
Routes 1 and 2 Saturday Boardings and Alightings by Stop

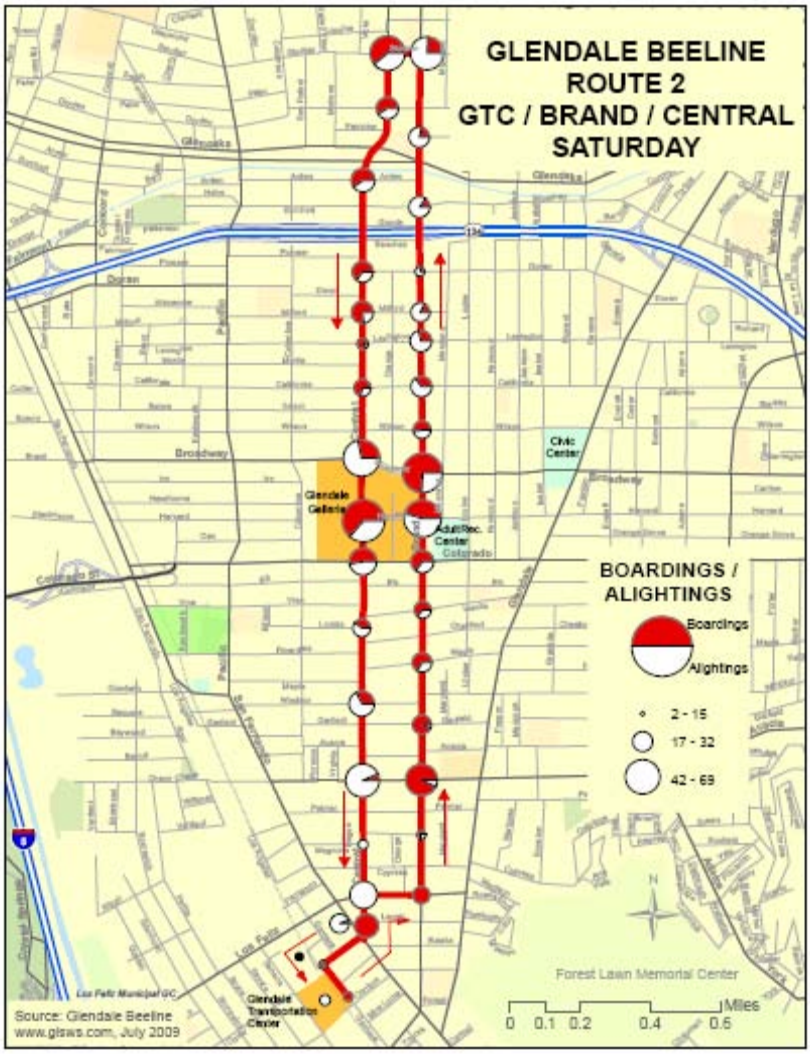
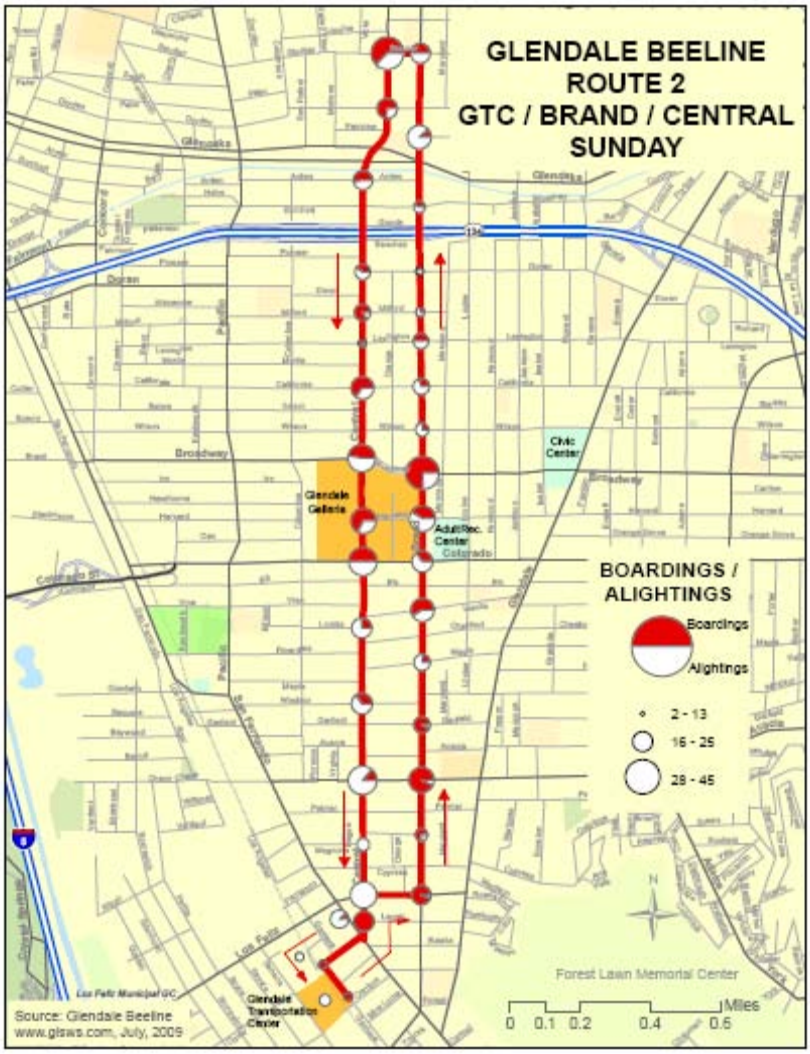

GLENDALE BEELINE
ROUTE 2
GTC / BRAND / CENTRAL
SATURDAY
BOARDINGS / ALIGHTINGS
Boardings
Alightings
2 - 16
17 - 32
42 - 69
Source: Glendale Beeline
www.glsws.com, July 2009
Miles
0 0.1 0.2 0.4 0.6

Figure 2.5
Routes 1 and 2 Sunday Boardings and Alightings by Stop


GLENDALE BEELINE
ROUTE 2
GTC / BRAND / CENTRAL
SUNDAY
BOARDINGS / ALIGHTINGS
Boardings
Alightings
2 - 13
16 - 25
28 - 45
Source: Glendale Beeline
www.glsws.com, July, 2009
Miles
0 0.1 0.2 0.4 0.6

Weekday Segment and Time of Day Analysis

Tables 2.7 and 2.8 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, boardings at Central & Chevy Chase are counted in the second segment. The ridership patterns in Table 2.7 suggest reasonably balanced demand between Routes 1 and 2 in the morning and afternoon, with more riders on Route 2 during the midday. The segments on both Brand and Central between Chevy Chase and Broadway/Harvard have the greatest passenger activity. Ridership is greater in the northbound direction, i.e., along Central on Route 1 and along Brand on Route 2, than in the southbound direction (along Brand for Route 1 and along Central for Route 2).

Table 2.7
Routes 1 and 2 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	Rt. 1	Rt. 2	Rt. 1	Rt. 2	Rt. 1	Rt. 2	Rt. 1	Rt. 2
GTC – Central & Chevy Chase	214	35	62	17	94	10	58	8
Central & Chevy Chase – Central & Broadway/Harvard	161	110	32	14	76	58	53	38
Central & Broadway/Harvard – Central & Arden	125	216	16	28	71	131	38	57
Central & Arden – Stocker & Brand	51	148	19	27	20	91	12	30
Stocker & Brand – Brand & Milford/Doran	204	35	42	4	98	20	64	11
Brand & Milford/Doran – Brand & Broadway	83	150	5	34	40	74	38	42
Brand & Broadway – Brand & Chevy Chase	145	217	22	34	80	117	43	66
Brand & Chevy Chase - GTC	15	196	5	43	7	94	3	59
Weekday Total	**998**	**1,107**	**203**	**201**	**486**	**595**	**309**	**311**
Total along Brand	**447**	**598**	**74**	**115**	**225**	**305**	**148**	**178**
Total along Central	**551**	**509**	**129**	**86**	**261**	**290**	**161**	**133**

Source: Ridecheck data, November 2008

Table 2.8 presents productivity, in terms of boardings per revenue hour, for Routes 1 and 2 by time of day and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Overall productivity is greater in the segments along Brand between Chevy Chase and Milford/Doran. Route 2 is more productive in all time periods, and productivity is higher in the northbound direction (along Central on Route 1 and along Brand on Route 2). The most productive route/time of day segment is northbound on Route 1 between GTC and Central & Chevy Chase in the morning peak (59.0 boardings per revenue hour), and the least productive is northbound on Route 2 between Brand & Doran and Stocker & Brand in the morning (5.1 boardings per revenue hour).

Table 2.8
Routes 1 and 2 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	Rt. 1	Rt. 2	Rt. 1	Rt. 2	Rt. 1	Rt. 2	Rt. 1	Rt. 2
GTC – Central & Chevy Chase	49.0	10.7	59.0	24.9	48.2	6.5	43.0	7.7
Central & Chevy Chase – Central & Broadway/Harvard	32.5	31.6	27.8	17.9	32.3	34.5	37.0	37.4
Central & Broadway/Harvard – Central & Arden	28.3	41.4	14.1	28.5	36.4	45.7	29.2	42.2
Central & Arden – Stocker & Brand	18.7	45.8	25.3	39.5	17.9	55.7	14.4	33.3
Stocker & Brand – Brand & Milford/Doran	44.7	10.4	40.0	5.1	46.3	13.3	46.3	10.3
Brand & Milford/Doran – Brand & Broadway	27.5	52.6	8.3	49.8	27.0	49.9	40.7	63.0
Brand & Broadway – Brand & Chevy Chase	32.7	47.0	18.3	36.4	41.0	54.8	34.4	43.0
Brand & Chevy Chase - GTC	3.6	41.6	4.8	51.6	4.3	38.6	2.0	41.2
Weekday Total	**30.5**	**35.9**	**25.3**	**31.3**	**33.2**	**38.8**	**30.8**	**34.3**
Total along Brand	**27.6**	**38.4**	**19.0**	**35.4**	**31.2**	**40.2**	**29.2**	**37.6**
Total along Central	**33.5**	**33.4**	**31.3**	**27.3**	**35.3**	**37.4**	**32.5**	**30.8**

Source: Ridecheck data, November 2008

Appendix A contains detailed information on weekend productivity. Weekend productivity is generally highest during the midday. The most productive segment on Saturday is southbound on Route 2 along Central between Harvard and Chevy Chase in the afternoon, with 62.9 boardings per revenue hour. The most productive segment on Sunday is northbound on Route 1 along Central between Chevy Chase and Broadway in the afternoon, with 48.8 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.9 shows the peak load points on Routes 1 and 2 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.9 indicates that the peak load point for weekday travel is on Route 2 at Brand & Broadway, with 344 passengers traveling northbound at this location throughout the day. The maximum load point is on Route 2 southbound on the weekday 1:10 p.m. trip at Central & Colorado, with 25 passengers on board.

Table 2.9
Routes 1 and 2 Peak and Maximum Load Points

Measure	Day	Route 1			Route 2		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Brand & Lexington	All Day	297	Brand & Broadway	All Day	344
	Saturday	Brand & Lexington	All Day	154	Brand & Wilson	All Day	152
	Sunday	Brand & Monterey	All Day	92	Central & Americana	All Day	103
Maximum Load Point	Weekday	GTC	6:50 a.m.	18	Central & Colorado	1:10 p.m.	25
	Saturday	Brand & Doran	12:22p.m.	18	Brand & Garfield	2:08 p.m.	15
	Sunday	Central & Lomita	1:12 p.m.	15	Central & Milford	9:46 a.m.	16

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.10 through 2.12 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Routes 1 and 2 on weekdays, Saturday, and Sunday.

Weekday on-time performance is 86 percent at all time points on Route 1, 4th among the ten weekday routes, and 82 percent on Route 2, 6th among the 10 weekday routes. Schedule adherence is best in the morning and declines throughout the day.

Traffic congestion is one cause of schedule adherence problems. Two segments along Central Avenue (between Stocker and Glenoaks and between S.R. 134 and Lexington) have Level of Service (LOS) F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on Brand Boulevard between S.R. 134 and Lexington.

Table 2.10
Routes 1 and 2 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	Rt. 1	Rt. 2	Total	Rt. 1	Rt. 2	Rt. 1	Rt. 2	Rt. 1	Rt. 2
On Time	293	273	566	71	63	130	131	92	79
Early	18	42	60	10	8	3	22	5	12
Late	31	18	49	0	1	20	9	11	8
On Time %	86%	82%	84%	88%	88%	85%	81%	85%	80%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.11) is 82 percent at all time points on Route 1, 2nd among the seven Saturday routes, and 74 percent at all timepoints on Route 2, 6th among the seven Saturday routes. As with weekdays, Route 1's schedule adherence is better than Route 2's, with a high of 89 percent schedule adherence on Route 1 in the afternoon period. Route 2 has a lower schedule adherence in the afternoon, unlike Route 1.

Table 2.11
Routes 1 and 2 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	Rt. 1	Rt. 2	Total	Rt. 1	Rt. 2	Rt. 1	Rt. 2
On Time	147	133	280	107	104	40	29
Early	9	15	24	6	7	3	8
Late	24	32	56	22	24	2	8
On Time %	82%	74%	78%	79%	77%	89%	64%

Source: Ridecheck Data, November 2008

Sunday on-time performance (Table 2.12) is 84 percent at all time points on Route 1, 2nd among the three Sunday routes, and 74 percent at all time points on Route 2, last among the three Sunday routes. Schedule adherence on Route 1 is best in the afternoon at 87 percent, while schedule adherence is consistent throughout the day on Route 2. Interestingly, early departures contribute more to on-time problems on Sunday compared to other days, particularly on Route 2.

Table 2.12
Routes 1 and 2 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	Rt. 1	Rt. 2	Total	Rt. 1	Rt. 2	Rt. 1	Rt. 2
On Time	152	120	272	113	87	39	33
Early	16	41	55	12	29	4	12
Late	12	1	13	10	1	2	0
On Time %	84%	74%	80%	84%	74%	87%	73%

Source: Ridecheck Data, November 2008

Schedule adherence is typically better on weekends (with lighter traffic and fewer riders) than on weekdays, but Routes 1 and 2 are exceptions to this rule. Congestion in downtown Glendale

may contribute to Saturday's lower schedule adherence. The number of early departures on Sunday suggests that changes in operating procedures are in order.

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.13 and 2.14 show average running times and scheduled running times by segment and time of day on weekdays for Routes 1 and 2. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Scheduled running time is adequate on Route 1 and on Route 2, although running time could be reallocated among route segments.

Table 2.13
Route 1 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
GTC – Central & Chevy Chase	5	6	6	6	6	6
Central & Chevy Chase – Central & Broadway	6	4	7	4	6	4
Central & Broadway – Central & Arden	6	6	6	6	5	6
Central & Arden – Stocker & Brand	4	4	3	4	4	4
Stocker & Brand – Brand & Milford	5	4	6	4	6	4
Brand & Milford – Brand & Broadway	3	5	4	5	4	5
Brand & Broadway – Brand & Chevy Chase	6	7	6	7	5	7
Brand & Chevy Chase - GTC	5	5	5	5	6	5
Average Running Time	40	40	41	41	42	41

Source: Ridecheck data, November 2008

Table 2.14
Route 2 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
GTC – Brand & Chevy Chase	5	7	7	7	7	7
Brand & Chevy Chase – Brand & Broadway	6	6	6	6	8	6
Brand & Broadway – Brand & Doran	5	5	4	5	3	5
Brand & Doran – Stocker & Brand	5	5	4	5	5	5
Stocker & Brand – Central & Arden	5	4	5	4	4	4
Central & Arden – Central & Americana	7	7	9	7	7	7
Central & Americana – Central & Chevy Chase	5	6	5	6	5	6
Central & Chevy Chase - GTC	5	5	5	5	5	5
Total	42	45	46	45	44	45

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 1 ranks 7th in ridership among the ten weekday routes. Route 2 is 4th among these ten routes. Ridership is higher in the northbound direction than in the southbound direction on both routes. Route 2 ranks 3rd in ridership among the seven Saturday routes, while Route 1 is 5th. On Sunday, Route 2 is 2nd in ridership among three routes and Route 1 is last. If the two routes are considered as a single route, then the combined Routes 1 and 2 would rank 3rd on weekdays and 1st on Saturday and Sunday in ridership.

Routes 1 and 2 rank in the middle to the bottom among Beeline routes in productivity, subsidy per passenger, and farebox recovery ratio because of the high service levels on these routes. Current service levels are somewhat higher than warranted by existing demand.

There are no instances of overcrowding on Routes 1 and 2.

Schedule adherence is better on Route 1 than on Route 2 on all days. Atypically, both routes have better on-time performance on weekdays than on weekends. Congestion in downtown Glendale may account for lower schedule adherence on Saturday. On Sunday, early departures are a bigger problem than late departures, especially on Route 2. The analysis in Chapter 8 will look more closely at frequency of service and schedule adherence on Routes 1 and 2.

Route 3 Galleria/College/JPL

Overview

Route 3 operates between Brand Boulevard & Broadway in downtown Glendale and the Jet Propulsion Laboratory (JPL) in La Cañada Flintridge (see Figure 2.6). Primary streets of operation include Broadway, Verdugo Road, Honolulu Avenue, La Crescenta Avenue, and Foothill Boulevard. Major destinations include The Glendale Galleria, Americana at Brand, downtown Glendale, Glendale Community College, La Cañada High School, Crescenta Valley High School, Rosemont Middle School, Renaissance Academy, Flintridge Preparatory School, St. Francis High School and JPL.

Route 3 has multiple functions. Its primary purpose is to connect downtown with GCC. Ridership and productivity are strongest along this segment of the route. Connections to La Cañada High School on the northern portion of the route are also important, particularly in the afternoon. Other schools in the area also contribute significant ridership in the afternoon. JPL is also an important destination on Route 3, but is less important to the route than the schools, especially because many of the boardings and alightings at JPL are transfers to and from Metro Line 177 serving Pasadena.

Route 3 includes the LCF shuttle service that operates on weekdays along Foothill Boulevard between Castle Road and JPL in La Cañada Flintridge. The City of La Cañada Flintridge provides a vehicle and operating funds for this added service. In addition the City of La Cañada Flintridge provides funding for six morning express trips from a city-owned parking lot near Foothill Boulevard & Cornishon Avenue to La Cañada High School (Oak Grove Drive & Foothill Boulevard) and JPL. Currently this service utilizes a Glendale Beeline bus and these six express trips carry a total of only 11 passengers. In the tables below, the LCF Shuttle service is referred to as LCF and the express service as LCFX.

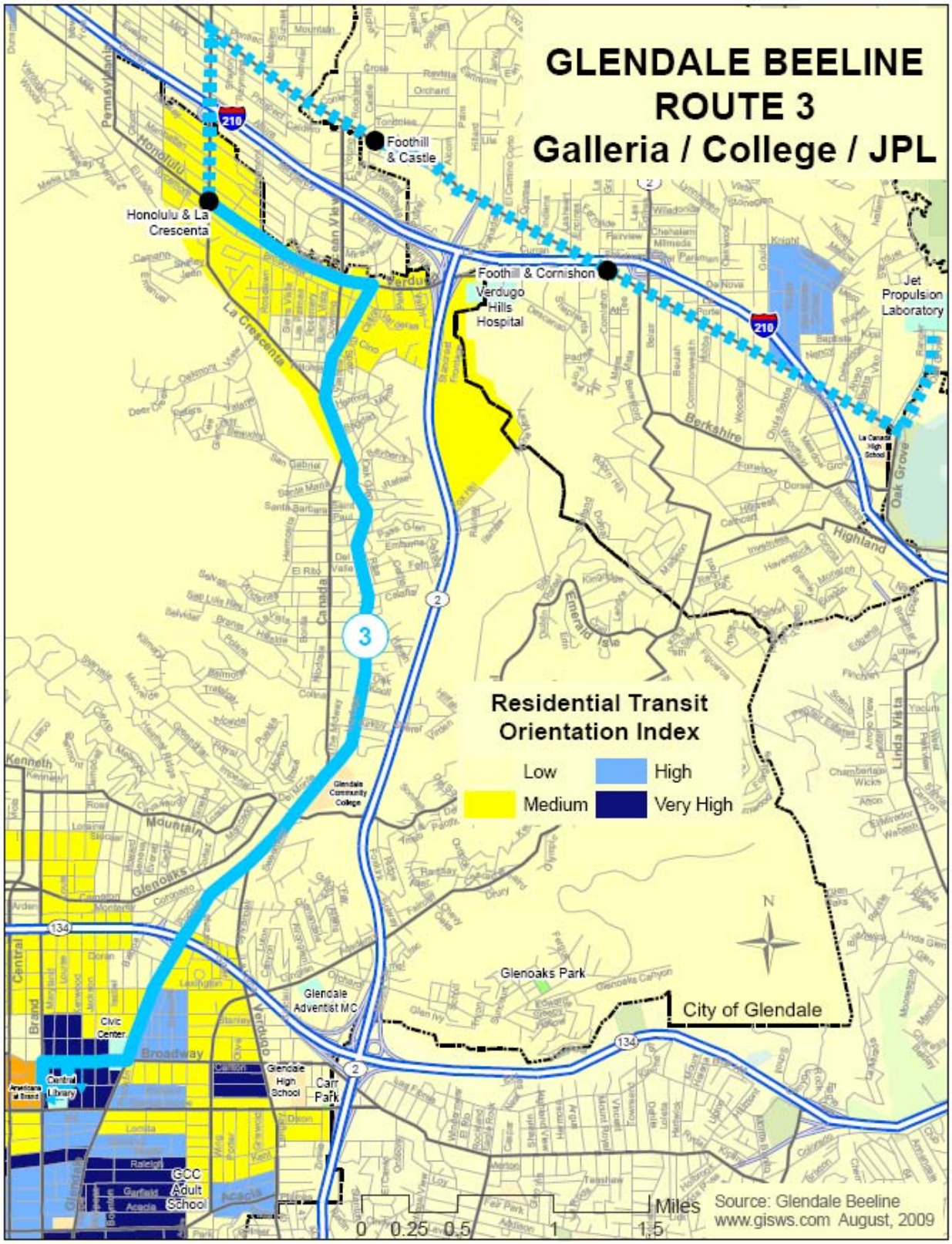
On Saturday, Route 3 operates between downtown Glendale and Honolulu & La Crescenta in Glendale (shown as the solid line in Figure 2.6). No service is provided in La Cañada Flintridge on Saturday.

Route 3 has the highest ridership totals of any Beeline route on weekdays and ranks second on Saturday. Glendale College and La Cañada High School are the primary reasons for this strong ridership. Seven weekday trips have loads in excess of 125 percent of capacity on Route 3. All of these were related to college class times or afternoon bell times at high schools and middle schools along the route.

Route 3 ranks only fourth in productivity on weekdays due to higher service levels, especially in La Cañada Flintridge. Heavy loads contribute to poor schedule adherence.

GCC-related trips are very important along the southern portion of this long route, while La Cañada High School students dominate the segment along Foothill Boulevard. Ridership and productivity are lower in between, especially along Verdugo north of GCC and on the western segment of Foothill Boulevard.

Figure 2.6
Route 3



Headway and Span of Service

Table 2.15 shows Route 3 headways by day of the week. Table 2.15 also indicates the span of service on Route 3. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Short trips result in more frequent service along the La Cañada Flintridge route segment on weekdays.

Table 2.15
Route 3 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday - Long	15-20	5:30 a.m. – 7:38 p.m.
Weekday – LCF	32-46	7:00 a.m. – 5:47 p.m.
Weekday – LCFX	20-25	6:30 a.m. – 8:30 a.m.
Saturday - Short	10-33	9:00 a.m. – 5:06 p.m.
Sunday	No service	

Operating Data

Table 2.16 presents operating data for Route 3. Among the ten weekday routes, Route 3 ranks 1st in boardings and 4th in boardings per revenue hour. Among the seven Saturday routes, Route 3 ranks 2nd in boardings and 2nd in boardings per revenue hour. As noted earlier, revenue hours in Table 2.16 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

The long trips account for most of the ridership on Route 3. LCF trips have 209 riders and 19.0 boardings per revenue hour. The six LCFX trips have 11 riders and 4.8 boardings per revenue hour.

Average trip length is 2.88 miles on weekdays and 2.38 miles on Saturday. Average trip length is shorter on Saturday because Route 3 only operates as far north Honolulu & La Crescenta in Glendale on Saturday. Route 3 ranks 2nd among the ten weekday routes and 2nd among the seven Saturday routes in average trip length.

Table 2.16
Route 3 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday Total	3,930	94.0	41.8	2.88
Weekday Long	3,710	80.7	47.4	--
Weekday LCF	209	11.0	19.0	--
Weekday LCFX	11	2.3	4.8	--
Saturday	648	22.7	28.5	2.38

Source: Ridecheck Data, November 2008

Table 2.17 presents financial data for Route 3. Route 3 ranks 4th in subsidy per boarding and 6th in farebox recovery ratio (passenger revenue divided by operating cost) among the ten weekday routes and 3rd among the seven Saturday routes in both measures. The LCF and especially the LCFX trips show very high subsidies per boarding and very low farebox recovery ratios.

Table 2.17
Route 3 Financial Data

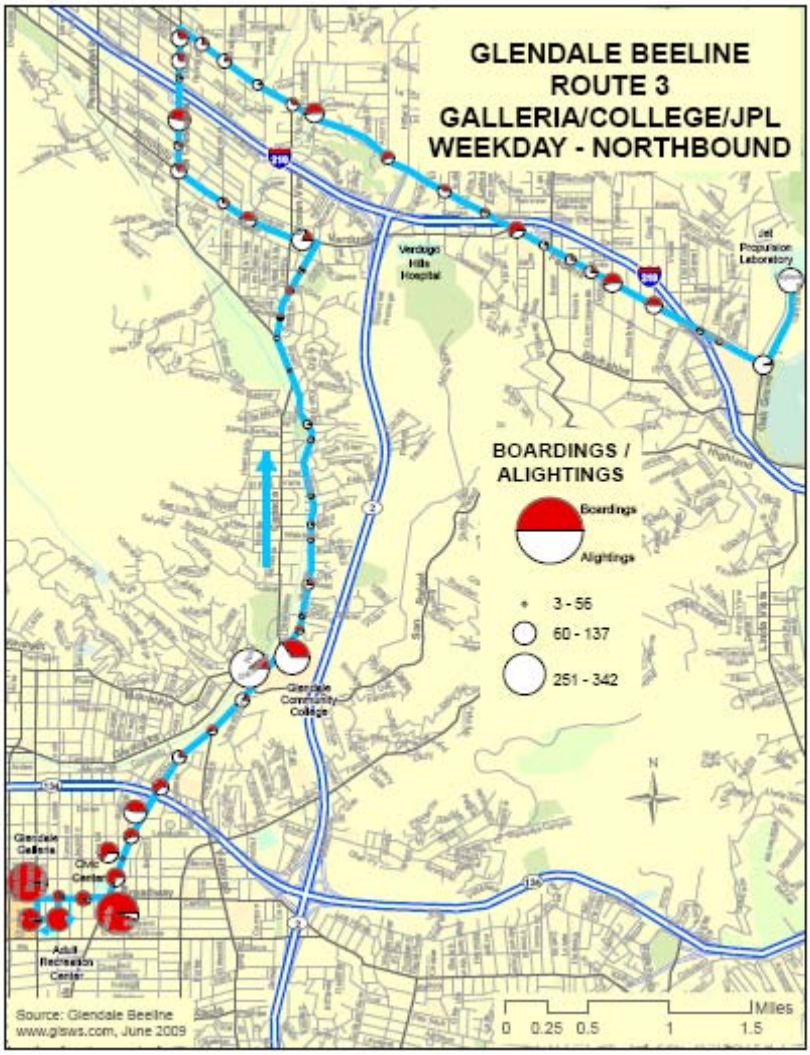
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday Total	3,930	$707	$7,170	$1.82	$1.64	9.9%
Weekday Long	3,710	$668	$6,154	$1.66	$1.48	10.9%
Weekday LCF	209	$38	$840	$4.02	$3.84	4.5%
Weekday LCFX	11	$2	$175	$15.95	$15.77	1.1%
Saturday	648	$117	$1,732	$2.67	$2.49	6.7%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figures 2.7 and 2.8 show boardings by stop and direction for weekdays and Saturday, respectively. The busiest stops (at least 100 boardings per weekday in one direction), in decreasing order of usage, include:

- Verdugo & Towne SB (Glendale Community College)
- Glendale & Broadway NB (Glendale Civic Center, transfer point for Beeline Route 4 and Metro Lines 180/181 and 780)
- Broadway & Brand NB (Glendale Galleria, Americana at Brand, transfer point for Beeline Routes 3 and 4 and Metro Lines 92, 180/181, 201, 780, and 794)
- Oak Grove & Foothill SB (La Cañada High School)
- Jet Propulsion Laboratory SB
- Harvard & Louise NB (library, Glendale Recreation Center, transfer point for Beeline Routes 4 and 13)
- Brand & Harvard NB (Glendale Galleria, Americana at Brand, transfer point for Beeline Routes 1, 2 and 4 and Metro Lines 92and 794)

Figure 2.7
Route 3 Weekday Boardings and Alightings by Stop




GLENDALE BEELINE
ROUTE 3
JPL/COLLEGE/GALLERIA
WEEKDAY - SOUTHBOUND
BOARDINGS / ALIGHTINGS
Boardings
Alightings
1 - 58
62 - 135
277 - 618
Verdugo Hills Hospital
Jet Propulsion Laboratory
Glendale Community College
Civic Center
Glendale Galleria
Adult Recreation Center
Source: Glendale Beeline
www.gisws.com, June 2009
0 0.25 0.5 1 1.5
Miles

Figure 2.8
Route 3 Saturday Boardings and Alightings by Stop


GLENDALE BEELINE
ROUTE 3
JPL/COLLEGE/GALLERIA
SATURDAY - SOUTHBOUND
BOARDINGS / ALIGHTINGS
Boardings
Alightings
2 - 17
22 - 47
80 - 131
Verdugo Hills Hospital
Glendale Community College
Civic Center
Glendale Galleria
Adult Recreation Center
Source: Glendale Beeline
www.gisws.com, June 2009
0 0.25 0.5 1 1.5
Miles

Table 2.18 shows that there are seven trips with segments whose loads exceed 125 percent of capacity on Route 3. Buses on Route 3 have an average of 38 seats, so loads of 47 and over exceed 125 percent of capacity. These trip segments are sorted by direction and time. All of these are related to travel to and from Glendale College or to high school bell times in the afternoon.

Table 2.18
Route 3 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Glendale & Broadway – Verdugo & Glendale College	Weekday	NB	7:26	10	69	College
Glendale & California – Glendale & Doran	Weekday	NB	7:46	2	48	College
Glendale & California – Verdugo & Glendale College	Weekday	NB	8:06	7	61	College
Oak Grove & Foothill – Foothill & Commonwealth; Verdugo & Mountain – Glendale & Wilson	Weekday	SB	2:38	14	58	La Cañada HS; College
Oak Grove & Foothill – Foothill & Gould	Weekday	SB	2:45	4	49	La Cañada HS
Oak Grove & Foothill – Foothill & Gould; Foothill & Rosemont – La Crescenta & Piedmont; Verdugo & Fern – Glendale & Broadway	Weekday	SB	3:03	25	72	La Cañada HS; Rosemont MS
La Crescenta & Mary – Honolulu & Las Palmas	Weekday	SB	3:23	7	70	Crescenta Valley HS; Renaissance Academy

Source: Ridecheck Data, November 2008

Weekday Segment and Time of Day Analysis

Tables 2.19 and 2.20 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, northbound boardings at Broadway & Brand are counted in the second segment. The ridership patterns in Table 2.19 suggest peak flows northbound in the morning and southbound in the afternoon. Northbound ridership is highest in the segment between Broadway & Brand and Glendale College (reflecting travel from downtown and to the college). Southbound ridership is strongest in the segments between Glendale College and Broadway & Brand (college students) and between JPL and Foothill & Verdugo (primarily La Cañada high school students, with some JPL workers and transfers from Metro Line 177).

Table 2.19
Route 3 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Harvard & Louise – Broadway & Brand	236	--	86	--	104	--	46	--
Broadway & Brand – Glendale College	986	674	293	63	465	451	228	160
Glendale College – Honolulu & Verdugo	182	171	19	35	117	70	46	66
Honolulu & Verdugo – Foothill & Castle	215	481	80	99	95	181	41	201
Foothill & Castle – Foothill & Verdugo	104	82	45	7	39	22	20	53
Foothill & Verdugo – JPL	157	642	37	56	99	277	21	309
Weekday Total	**1,880**	**2,050**	**560**	**260**	**919**	**1,001**	**401**	**789**

Source: Ridecheck data, November 2008

Table 2.20 presents productivity, in terms of boardings per revenue hour, for Route 3 by time of day and route segment. Productivity is reasonably consistent at all times of day. The most productive route/time of day segment (excepting the very short Harvard & Louise – Broadway & Brand segment) is northbound between Broadway & Brand and Glendale College in the midday (98.2 boardings per revenue hour), and the least productive is northbound between Foothill & Verdugo and JPL in the morning (9.7 boardings per revenue hour, partly due to the amount of service operating along this segment in the morning). The most productive southbound segment is between JPL and Foothill & Verdugo, with 80.3 boardings per revenue hour in the afternoon peak.

Table 2.20
Route 3 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Harvard & Louise – Broadway & Brand	112.4	--	177.9	--	105.8	--	74.6	--
Broadway & Brand – Glendale College	93.3	55.5	96.1	28.0	98.2	76.9	82.4	39.8
Glendale College – Honolulu & Verdugo	25.6	21.8	9.7	22.6	36.4	19.0	24.0	25.4
Honolulu & Verdugo – Foothill & Castle	22.4	43.3	30.4	41.0	21.3	37.3	16.0	52.4
Foothill & Castle – Foothill & Verdugo	18.3	12.5	26.0	5.0	14.8	7.1	15.2	25.9
Foothill & Verdugo – JPL	15.6	57.7	9.7	26.7	25.1	51.9	9.3	83.9
Weekday Total	**41.7**	**43.3**	**40.9**	**47.7**	**45.9**	**42.0**	**35.1**	**50.0**

Source: Ridecheck data, November 2008

Appendix A contains detailed information on Saturday productivity. Saturday productivity is slightly higher in the midday than in the afternoon. The most productive segment on Saturday (again excepting the very short Harvard & Louise – Broadway & Brand segment) is northbound between Broadway & Brand and Glendale College in the midday, with 51.0 boardings per revenue hour. The most productive southbound segment on Saturday is along Honolulu between La Crescenta and Ocean in the midday, with 33.2 boardings per revenue hour. Overall productivity on Saturday is 28.5 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.21 shows the peak load points in either direction on Route 3 for weekday and Saturday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.21 indicates that the peak load point for weekday travel is northbound at Glendale & Monterey, with 994 passengers traveling northbound at this location throughout the day. The maximum load point is southbound on the weekday 3:03 p.m. trip at Glendale & Doran, with 72 passengers on board.

Table 2.21
Route 3 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Glendale & Monterey	All Day	994	Glendale & Doran	All Day	943
	Saturday	Glendale & Broadway	All Day	209	Glendale & Lexington	All Day	238
Maximum Load Point	Weekday	Glendale & Doran	7:26 a.m.	69	Glendale & Doran	3:03 p.m.	72
	Saturday	Glendale & California	2:53 p.m.	23	Glendale & Doran	12:27 p.m. and 1:00 p.m.	24

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.22 and 2.23 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 3 on weekdays and Saturday.

Weekday on-time performance is 67 percent at all time points, 8th among the ten weekday routes. Northbound schedule adherence is generally better than southbound. Schedule adherence in both directions is worse during the afternoon peak periods, with southbound on-time performance dropping to 52 percent in the afternoons. Heavy loads on Route 3 are partially responsible for low on-time performance.

Traffic congestion is one cause of schedule adherence problems. One segment along Glendale Avenue (between S.R. 134 and Lexington) has LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on Glendale Avenue between Lexington and Broadway and between Glenoaks and Verdugo.

Table 2.22
Route 3 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	263	147	410	85	42	119	48	59	57
Early	25	9	34	8	0	12	6	5	3
Late	82	82	164	14	21	29	12	39	49
On Time %	71%	62%	67%	79%	67%	74%	73%	57%	52%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.23) is 69 percent at all time points, last among the seven Saturday routes. Saturday schedule adherence is best in the afternoon and in the northbound direction. Southbound schedule adherence is very low in the midday at 54 percent.

Table 2.23
Route 3 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	74	50	124	52	30	22	20
Early	7	4	11	4	3	3	1
Late	19	26	45	19	23	0	3
On Time %	74%	63%	69%	69%	54%	88%	83%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.24 and 2.25 show average northbound and southbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. The running times for Route 3 are generally appropriate in both directions.

Table 2.24
Route 3 Average versus Scheduled Northbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Harvard & Louise – Broadway & Brand	2	1	3	1	3	1
Broadway & Brand – Glendale College	15	15	14	15	12	15
Glendale College – Honolulu & Verdugo	10	8	10	8	9	8
Honolulu & Verdugo – Foothill & Castle	13	15	14	15	12	15
Foothill & Castle – Foothill & Verdugo	6	7	5	7	4	7
Foothill & Verdugo – JPL*	10	9	8	7	8	7
Total Running Time – Long	56	55	54	53	48	53
Total Running Time – short*	16	16	14	14	12	14

* Includes express trips in the morning peak period
Source: Ridecheck data, November 2008

Table 2.25
Route 3 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
JPL – Foothill & Verdugo	9	8	9	8	10	8
Foothill & Verdugo - Foothill & Castle	6	6	5	6	6	6
Foothill & Castle – Verdugo & Honolulu	10	9	8	12	10	12
Verdugo & Honolulu – Glendale College	8	8	9	8	9	8
Glendale College – Harvard & Louise	12	15	15	15	14	15
Total Running Time – Long	44	45	46	49	49	49
Total Running Time - Short	14	14	14	14	16	14

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip. Saturday schedule adherence difficulties are related to late trips in the midday.

Overall Assessment

Route 3 has the highest ridership totals of any Beeline route on weekdays and ranks second on Saturday. Glendale College, JPL, La Cañada High School, Crescenta Valley High School, Rosemont Middle School, Renaissance Academy, Flintridge Preparatory School, and St. Francis High School contribute to this strong ridership.

Route 3 ranks only fourth in productivity on weekdays due to higher service levels, especially in La Cañada Flintridge. The segment/time of day analysis indicates a reasonably even distribution of ridership and productivity across all times of day. The most productive segments are between Broadway & Brand and Glendale College and southbound between JPL and Foothill & Verdugo.

Seven weekday trips had loads in excess of 125 percent of capacity on Route 3. All of these were related to college class times or afternoon bell times at high schools and middle schools along the route. No weekend trips had loads in excess of 125 percent.

Schedule adherence is 8th among the ten weekday routes and last on Saturday. Running times are generally appropriate, but heavy loads contribute to low schedule adherence.

Route 3 is an important route in both Glendale and La Cañada Flintridge, and serves major destinations. The analysis in Chapter 8 will take a closer look at the short trips operating in La Cañada Flintridge, at overcrowded trips, and at schedule adherence along the entire route.

Route 4 Chevy Chase/Broadway/Galleria

Overview

Route 4 operates between Chevy Chase Drive & Brand Boulevard and Colorado Street & Central Avenue, serving Glendale neighborhoods due east of downtown (see Figure 2.9). Primary streets of operation include Chevy Chase Drive, Broadway, Glendale Avenue, Harvard Street, Brand Boulevard, Central Avenue, and Colorado Street. Major destinations include Downtown Glendale, the Glendale Galleria, Americana at Brand, Glendale Civic Center, the Central Library, and Roosevelt Middle School.

Route 4 serves neighborhoods with a very high orientation toward transit. This is the primary factor in its high ridership and very high productivity. Route 4 is the second busiest weekday route in the Beeline system after Route 3 and the busiest weekend route. There are nine stops along the route that have over 100 boardings per weekday. The ridecheck identified 13 instances of overcrowding, 12 on weekdays and one on Saturday.

Route 4 is the most productive route on all days. The segment/time of day analysis indicates very high productivity on segments along Chevy Chase Drive (where transit orientation is very high throughout the day.

Route 4 is a strong route that connects several destinations in and near downtown Glendale and serves neighborhoods where the demographics are favorable for high transit usage.

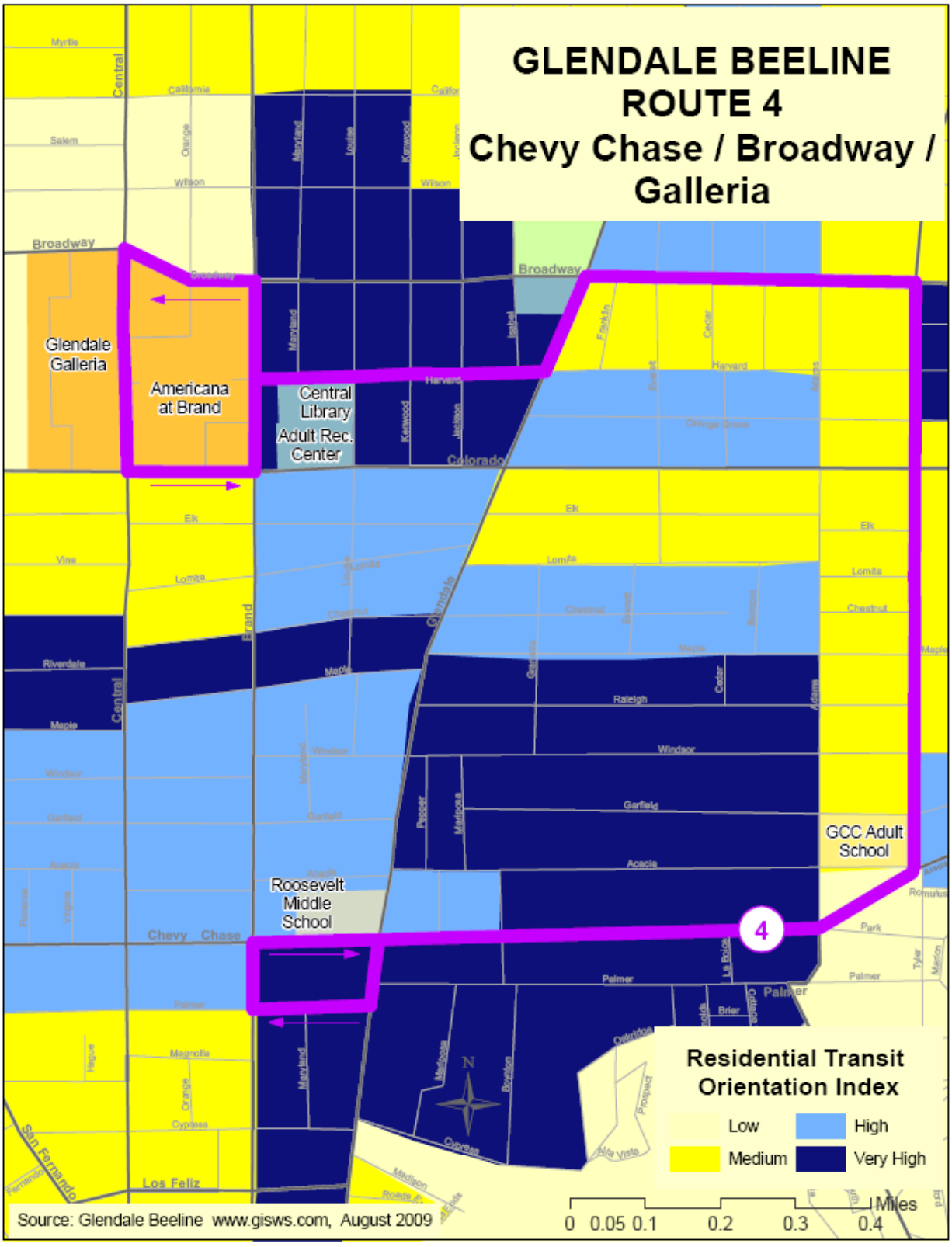
Headway and Span of Service

Table 2.26 shows Route 4 headways by day of the week. Table 2.26 also indicates the span of service on Route 4. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Route 4 is one of only three Beeline routes that operate on Sunday.

Table 2.26
Route 4 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	16-26	6:00 a.m. – 7:00 p.m.
Saturday	20-36	9:00 a.m. – 5:13 p.m.
Sunday	20-36	9:00 a.m. – 5:13 p.m.

Figure 2.9
Route 4



Operating Data

Table 2.27 presents operating data for Route 4. Among the ten weekday routes, Route 4 ranks 2nd in boardings and 1st in boardings per revenue hour. Among the seven Saturday routes, Route 4 ranks 1st in boardings and in boardings per revenue hour. Among the three Sunday local routes, Route 4 ranks 1st in boardings and in boardings per revenue hour. As noted earlier, revenue hours in Table 2.45 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

Average trip lengths range between 1.38 and 1.52 miles on all days. Route 4 ranks 7th among the ten weekday routes in average trip length, 3rd among the seven Saturday routes, and 1st among the three Sunday local routes.

Table 2.27
Route 4 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	2,560	38.1	67.2	1.46
Saturday	843	16.3	51.8	1.38
Sunday	646	16.3	39.7	1.52

Source: Ridecheck Data, November 2008

Table 2.28 presents financial data for Route 4. Route 4 ranks 1st in subsidy per boarding and 2nd in farebox recovery ratio (passenger revenue divided by operating cost) among the ten weekday routes, and 1st in both measures among the seven Saturday routes and among the three Sunday routes.

Table 2.28
Route 4 Financial Data

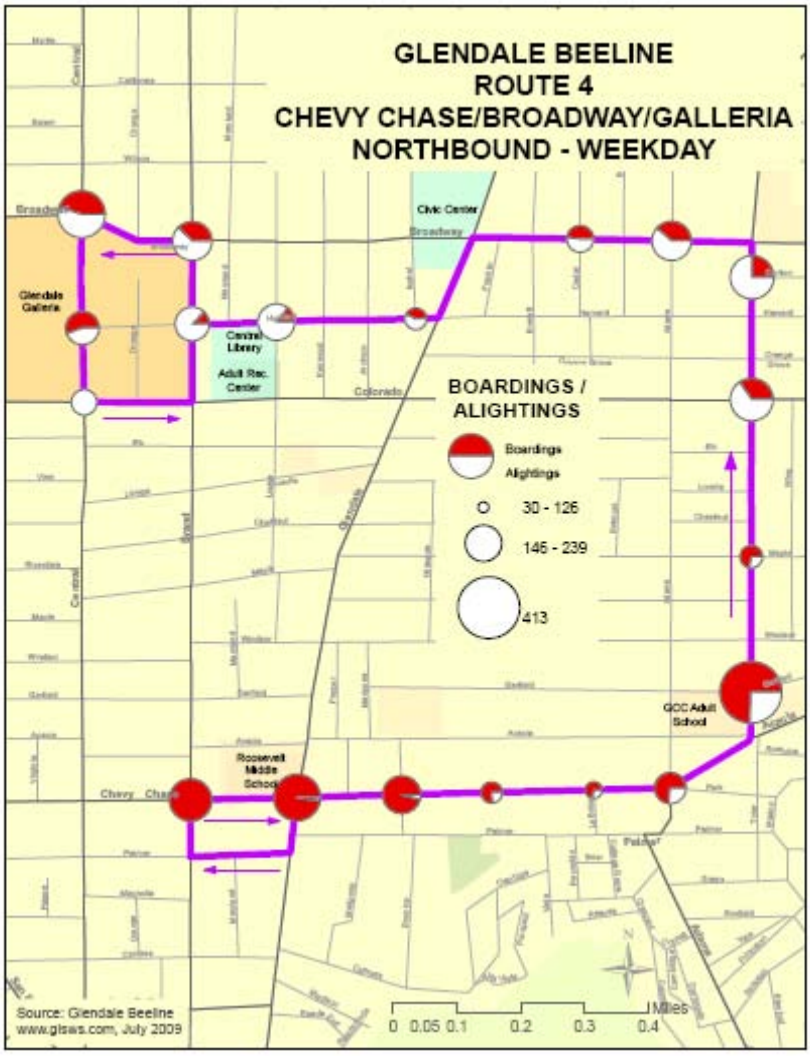
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	2,560	$461	$2,905	$1.13	$0.95	15.9%
Saturday	843	$152	$1,241	$1.47	$1.29	12.2%
Sunday	646	$116	$1,241	$1.92	$1.74	9.4%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figures 2.10 through 2.12 show boardings by stop and direction for weekdays, Saturday, and Sunday, respectively. The busiest stops (at least 100 boardings per weekday in one direction), in decreasing order of usage, are:

- Chevy Chase & Garfield NB (GCC Adult School)
- Chevy Chase & Glendale NB (Roosevelt Middle School, transfer point for Metro Lines 90, 91, and 183)
- Chevy Chase & Brand NB (Roosevelt Middle School, transfer point for Beeline Routes 1 and 2 and Metro Lines 92 and 794)
- Broadway & Glendale SB (Glendale Civic Center, transfer point for Beeline Route 3 and Metro Lines 180/181 and 780)
- Chevy Chase & Boynton NB
- Chevy Chase opposite Carlton SB (transfer point for Metro Lines 180/181 and 780)
- Harvard & Louise SB (Central Library, Adult Recreation Center, transfer point for Beeline Routes 3 and 13)
- Central & Broadway NB (Glendale Galleria, transfer point for Beeline Routes 1 and 2 and Metro Lines 180/181, 183, and 780)
- Chevy Chase & Colorado SB (transfer point for Beeline Route 6 and Metro Lines 81, 84, and 183).

Figure 2.10
Route 4 Weekday Boardings and Alightings by Stop



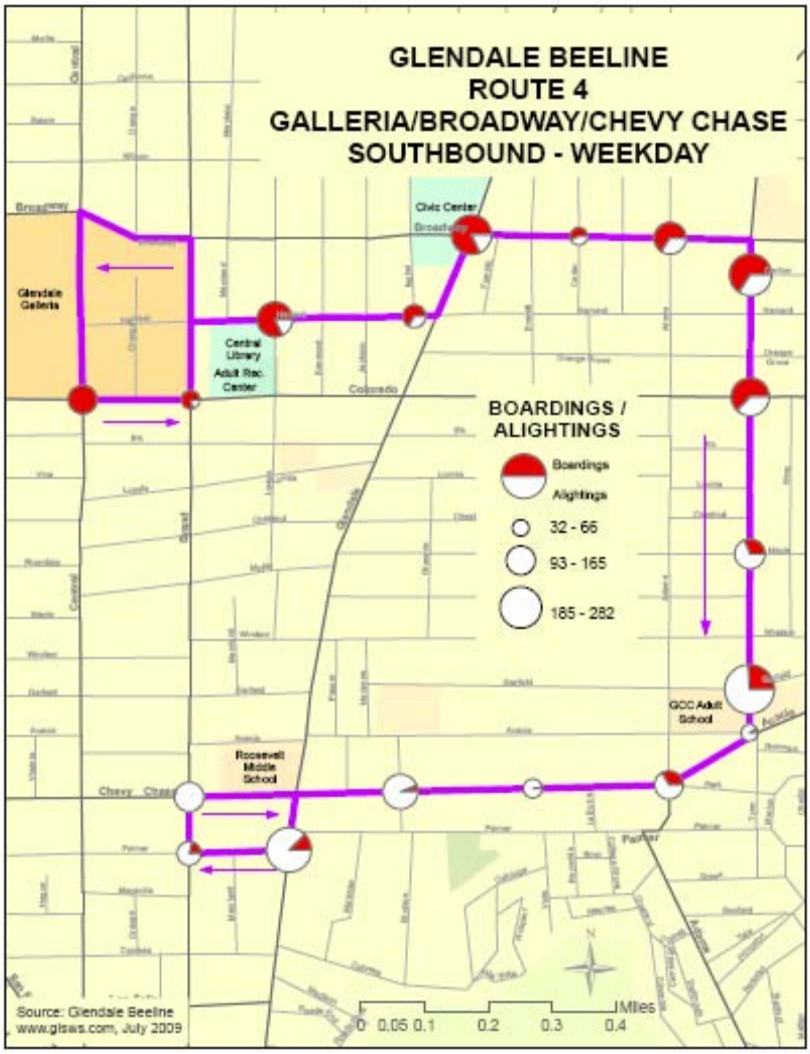

GLENDALE BEELINE
ROUTE 4
GALLERIA/BROADWAY/CHEVY CHASE
SOUTHBOUND - WEEKDAY
Glendale Galleria
Civic Center
Central Library
Adult Rec. Center
Colorado
BOARDINGS / ALIGHTINGS
Boardings
Alightings
32 - 66
93 - 165
185 - 282
GCC Adult School
Roosevelt Middle School
Chevy Chase
Palmer
Source: Glendale Beeline
www.glsws.com, July 2009
0 0.05 0.1 0.2 0.3 0.4
Miles

Figure 2.11
Route 4 Saturday Boardings and Alightings by Stop

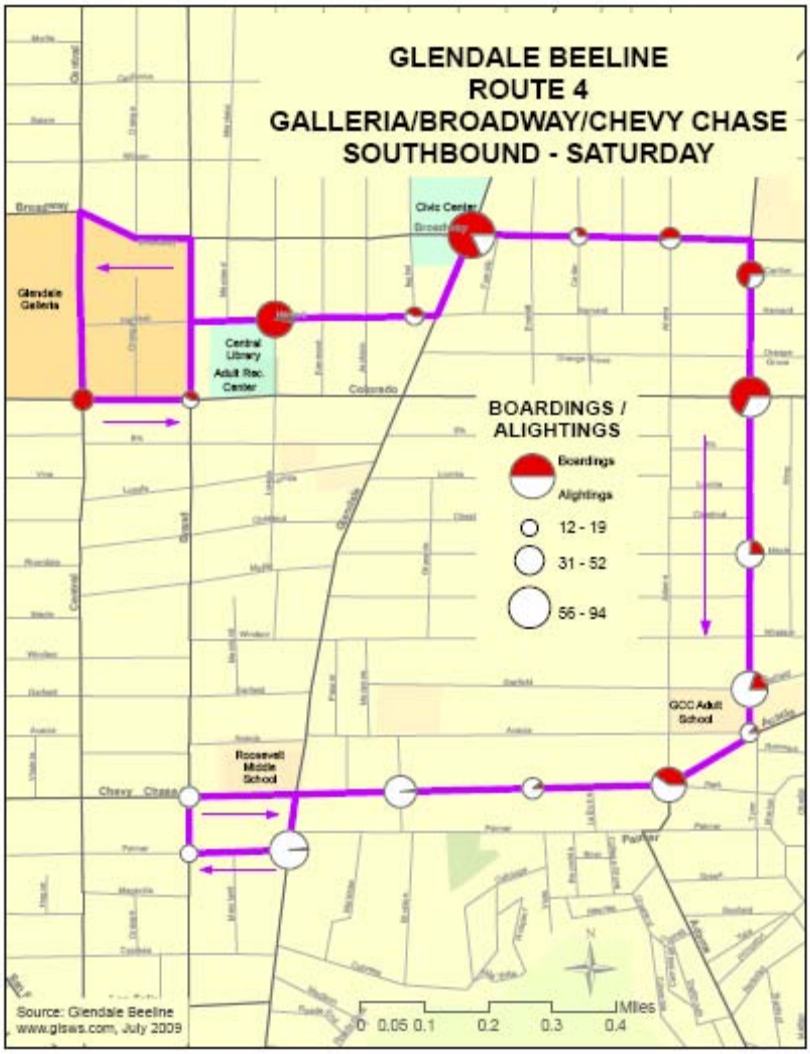
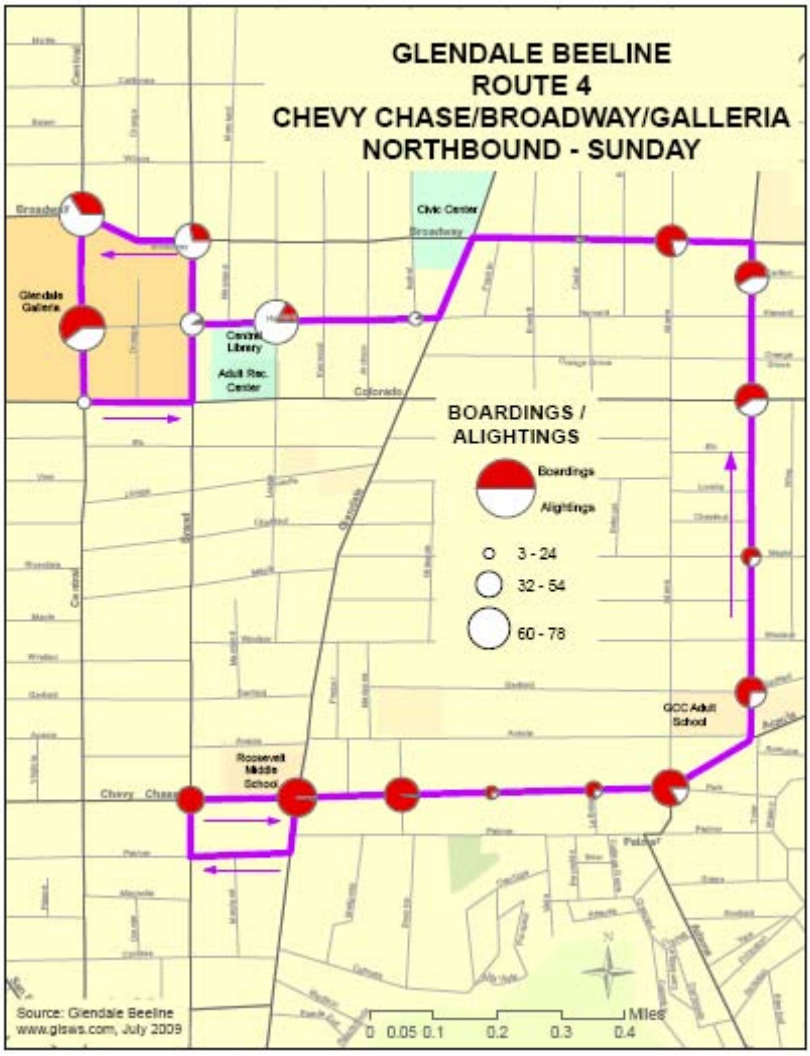

GLENDALE BEELINE
ROUTE 4
GALLERIA/BROADWAY/CHEVY CHASE
SOUTHBOUND - SATURDAY
Glendale Galleria
Civic Center
Central Library
Adult Rec. Center
Colorado
BOARDINGS / ALIGHTINGS
Boardings
Alightings
12 - 19
31 - 52
56 - 94
GCC Adult School
Roosevelt Middle School
Chevy Chase
Palmer
Source: Glendale Beeline
www.glsws.com, July 2009
0 0.05 0.1 0.2 0.3 0.4
Miles

Figure 2.12
Route 4 Sunday Boardings and Alightings by Stop



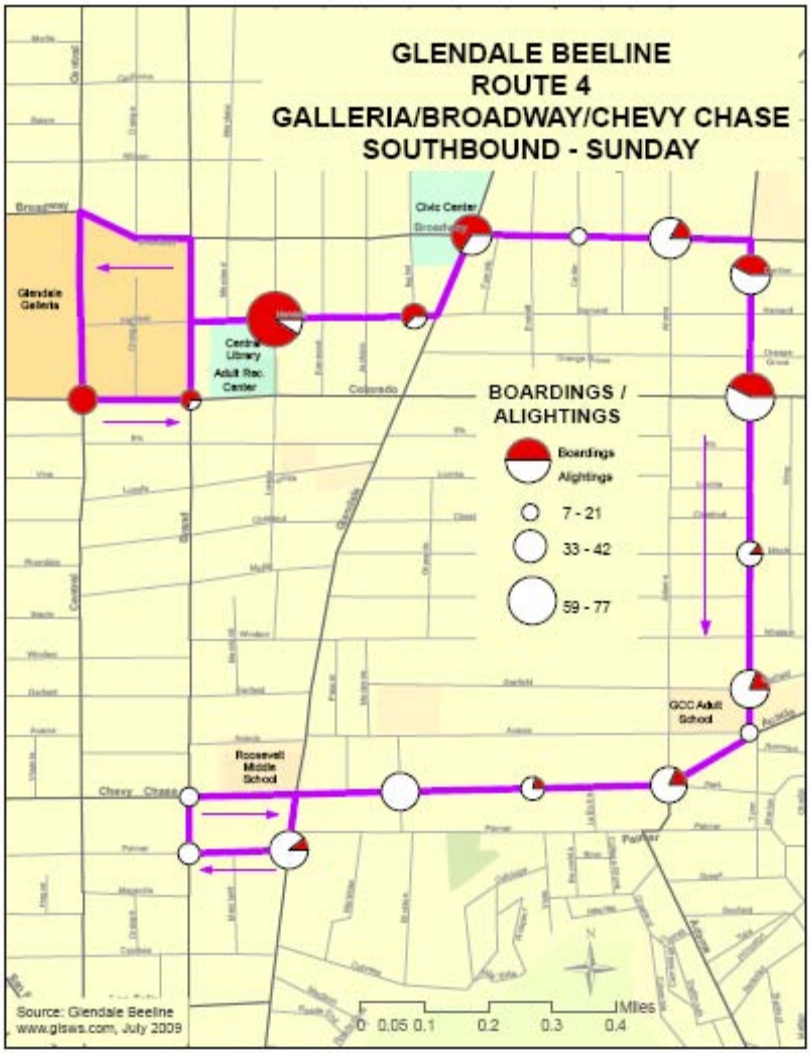

GLENDALE BEELINE
ROUTE 4
GALLERIA/BROADWAY/CHEVY CHASE
SOUTHBOUND - SUNDAY
Glendale Galleria
Civic Center
Central Library
Adult Rec. Center
Colorado
Roosevelt Middle School
GCC Adult School
Chevy Chase
Palmer
BOARDINGS / ALIGHTINGS
Boardings
Alightings
7 - 21
33 - 42
59 - 77
Source: Glendale Beeline
www.glsws.com, July 2009
0 0.05 0.1 0.2 0.3 0.4
Miles

Table 2.29 lists trips with segments whose loads exceed 125 percent of capacity on Route 4. Buses on Route 4 seat 30 passengers, so loads of 38 and over exceed 125 percent of capacity. These trip segments are sorted by day, direction and time. Thirteen trips, 12 on weekdays and one on Saturday, experienced loads exceeding 125 percent of capacity on Route 4. Overcrowding was related to school loads on several weekday trips. In 2004, two weekday trips and two Saturday trips had loads exceeding 125 percent of capacity.

Table 2.29
Route 4 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Chevy Chase & Colorado – Chevy Chase & Carlton	Weekday	NB	7:04 a.m.	1	39	Glendale HS transfers
Chevy Chase & Boynton – Broadway & Adams	Weekday	NB	7:20 a.m.	8	54	Glendale HS transfers
Chevy Chase & Glendale – Chevy Chase & Carlton	Weekday	NB	7:36 a.m.	8	62	
Chevy Chase & Maple – Chevy Chase & Colorado	Weekday	NB	8:50 a.m.	1	38	
Chevy Chase & Maple – Broadway & Adams	Weekday	NB	11:24 a.m.	3	41	
Chevy Chase & Garfield – Broadway & Cedar	Weekday	NB	11:40 a.m.	5	58	
Broadway & Adams – Glendale & Broadway	Weekday	NB	2:04 p.m.	2	40	
Chevy Chase & Glendale – Chevy Chase & Garfield; Chevy Chase & Colorado – Glendale & Broadway	Weekday	NB	3:18 p.m.	9	57	Roosevelt Middle School
Chevy Chase opp. Carlton – Chevy Chase & Maple	Weekday	SB	8:14 a.m.	2	40	
Chevy Chase opp. Carlton – 713 Chevy Chase	Weekday	SB	11:30 a.m.	6	49	
Broadway & Adams – Chevy Chase & Boynton	Weekday	SB	3:14 p.m.	8	57	
Broadway & Glendale – Glendale & Palmer	Weekday	SB	3:40 p.m.	11	68	Glendale HS transfers
Chevy Chase & Garfield – Glendale & Broadway	Saturday	NB	10:52 a.m.	6	45	

Source: Ridecheck Data, November 2008

Weekday Segment and Time of Day Analysis

Tables 2.30 and 2.31 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, northbound boardings at Chevy Chase & Garfield are counted in the second segment. The ridership patterns in Table 2.30 suggest a peak flow northbound throughout the day (boardings at the Glendale Galleria are counted in the northbound direction because they occur before the layover at Colorado & Central). Northbound ridership is highest in the segment along Chevy Chase between Brand and Garfield, while southbound ridership is strongest in the central

segments of the route (Broadway & Adams to Chevy Chase & Garfield and Harvard & Louise to Broadway & Adams)

Table 2.30
Route 4 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Chevy Chase & Brand – Chevy Chase & Garfield	710	161	243	71	291	58	176	32
Chevy Chase & Garfield – Broadway & Adams	467	349	86	61	264	122	117	166
Broadway & Adams – Harvard & Louise	144	329	20	54	90	165	34	110
Harvard & Louise – Colorado & Central	274	126	41	25	157	70	76	31
Weekday Total	**1,595**	**965**	**390**	**211**	**802**	**415**	**403**	**339**

Source: Ridecheck data, November 2008

Table 2.31 presents productivity, in terms of boardings per revenue hour, for Route 4 by time of day and route segment. Northbound productivity is highest during the midday and southbound productivity is highest during the afternoon peak period. The most productive route/time of day segment is northbound along Chevy Chase between Brand and Garfield in the morning peak (220.9 boardings per revenue hour, an extraordinarily high number), and the least productive segment is northbound between Broadway & Adams and Harvard & Louise in the morning peak (25.5 boardings per revenue hour). The most productive southbound segment is between Broadway & Adams and Chevy Chase & Garfield in the afternoon peak, with 110.7 boardings per revenue hour.

Table 2.31
Route 4 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Chevy Chase & Brand – Chevy Chase & Garfield	150.5	25.3	220.9	45.8	128.4	20.4	132.0	16.4
Chevy Chase & Garfield – Broadway & Adams	115.3	69.3	81.9	57.2	148.0	50.1	96.2	110.7
Broadway & Adams – Harvard & Louise	38.9	60.0	25.5	48.4	45.4	55.3	37.1	79.5
Harvard & Louise – Colorado & Central	46.4	45.5	29.6	33.3	56.7	53.8	43.8	45.4
Weekday Total	**86.7**	**49.0**	**90.0**	**46.7**	**90.8**	**43.2**	**77.0**	**60.9**

Source: Ridecheck data, November 2008

Appendix A contains detailed information on weekend productivity. Northbound productivity is generally highest during the midday on weekends, while southbound productivity is highest in the afternoon. The most productive segment on Saturday is northbound along Chevy Chase between Brand and Garfield in the midday, with 127.4 boardings per revenue hour. The most productive southbound segment on Saturday is between Broadway & Adams and Harvard & Louise in the afternoon, with 63.0 boardings per revenue hour.

The most productive Sunday segment is northbound along Chevy Chase between Brand and Garfield in the midday, with 116.2 boardings per revenue hour. The most productive southbound segment is between Broadway & Adams and Harvard & Louise in the afternoon, with 77.1 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.32 shows the peak load points in either direction on Route 4 for weekday, Saturday, and Sunday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.32 indicates that the peak load point for weekday travel is northbound at Chevy Chase & Maple, with 947 passengers traveling northbound at this location throughout the day. The maximum load point is southbound on the weekday 3:40 p.m. trip at Chevy Chase & Colorado, with 68 passengers on board.

Table 2.32
Route 4 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Chevy Chase & Maple	All Day	947	Chevy Chase & Colorado	All Day	773
	Saturday	Chevy Chase & Maple	All Day	291	Chevy Chase & Colorado	All Day	234
	Sunday	Broadway & Adams	All Day	254	Broadway & Glendale	All Day	211
Maximum Load Point	Weekday	718 Chevy Chase	7:36 a.m.	62	Chevy Chase & Colorado	3:40 p.m.	68
	Saturday	Broadway & Cedar	10:52 a.m.	45	Chevy Chase & Maple	3:21 p.m.	30
	Sunday	Broadway & Adams	12:54 p.m.	30	Broadway & Adams	1:39 p.m.	27

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.33 through 2.35 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 4 on weekdays, Saturday, and Sunday. Schedule adherence has declined slightly on weekdays and Saturday on Route 4, and has improved slightly on Sunday.

Weekday on-time performance is 72 percent at all time points, 7th among the ten weekday routes. Northbound schedule adherence is better than southbound for all time periods. Schedule adherence is best in the morning (95 percent northbound), drops in the midday (60 percent southbound), then rises in the afternoon.

Traffic congestion is one cause of schedule adherence problems. No segments of Route 4 are along streets with LOS below D in the afternoon peak hour.

Table 2.33
Route 4 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	206	151	357	63	42	84	64	59	45
Early	13	25	38	2	6	3	3	8	16
Late	51	51	102	1	2	39	40	11	9
On Time %	76%	67%	72%	95%	84%	67%	60%	76%	64%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.34) is 79 percent at all time points, 5th among the seven Saturday routes. Northbound schedule adherence at 80 percent is better than southbound, similar to weekday trends. Saturday northbound trips are more likely to be on time than southbound trips in the afternoon, but not in the midday. Northbound trips are on time 76 percent of the time in the midday, increasing to 96 percent in the afternoon. Conversely, southbound trips are on time 80 percent of the time in the midday, but southbound schedule adherence falls to 68 percent in the afternoon.

Table 2.34
Route 4 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	82	65	147	59	48	23	17
Early	6	12	18	5	4	1	8
Late	14	8	22	14	8	0	0
On Time %	80%	76%	79%	76%	80%	96%	68%

Source: Ridecheck Data, November 2008

Sunday on-time performance (Table 2.35) is 87 percent at all time points, 1st among the three Sunday routes. Sunday northbound schedule adherence is 88 percent throughout the day, while southbound schedule adherence is 87 percent in the midday and 80 percent in the afternoon.

Table 2.35
Route 4 Sunday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	90	72	848	69	52	21	20
Early	7	9	87	4	4	3	5
Late	5	4	130	5	4	0	0
On Time %	88%	85%	87%	88%	87%	88%	80%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.36 and 2.37 show average northbound and southbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Northbound running time may need to be adjusted in the midday. Southbound running time could be reduced in the afternoon.

Table 2.36
Route 4 Average versus Scheduled Northbound Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Chevy Chase & Brand – Chevy Chase & Garfield	6	6	6	6	6	6
Chevy Chase & Garfield – Broadway & Adams	5	4	5	4	5	4
Broadway & Adams – Harvard & Louise	4	5	6	5	4	5
Harvard & Louise – Brand & Broadway	2	2	3	2	3	2
Brand & Broadway – Central & Colorado	5	5	5	5	4	5
Average Running Time	22	22	25	22	23	22

Source: Ridecheck data, November 2008

Table 2.37
Route 4 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Colorado & Central – Harvard & Louise	3	5	3	5	2	5
Harvard & Louise – Broadway & Adams	5	5	7	5	5	5
Broadway & Adams – Chevy Chase & Garfield	5	5	5	5	5	5
Chevy Chase & Garfield – Brand & Chevy Chase	7	6	7	6	7	6
Average Running Time	20	21	21	21	19	21

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 4 is the second busiest weekday route in the Beeline system after Route 3 and the busiest weekend route. There are nine stops along the route that have over 100 boardings per weekday.

Route 4 is the most productive route on all days. The route also ranks first or second in financial measures. The segment/time of day analysis indicates very high productivity on segments along Chevy Chase Drive throughout the day.

The ridecheck identified 13 instances of overcrowding, 12 on weekdays and one on Saturday.

Schedule adherence is below the system average on weekdays and Saturday, although Sunday on-time performance is excellent. Schedule adherence is generally better in the northbound direction.

Route 4 is a strong route that connects several destinations in and near downtown Glendale. A closer analysis of running time is indicated. Ridership is high and productivity is impressive.

Route 5 Edison/Pacific/Hoover

Overview

Route 5 operates between Riverdale & Pacific immediately west of downtown Glendale and Glenwood & Concord northwest of downtown. Pacific Avenue is the major street of operation for Route 5 (see Figure 2.13). Major destinations include the Glendale Galleria, Americana at Brand, Hoover High School, Toll Middle School, and Pacific Edison Community Center.

The primary role of Route 5 is to provide a north-south connection in the western portion of Glendale. Its primary function is bringing students to and from Hoover High School and Toll Middle School. Approximately 40 percent of all passenger activity occurs at the Glenwood & Concord stop adjacent to the school.

Route 5 is strongest in ridership and productivity on weekdays, due to the importance of school trips on this route. All routes show the same trend of higher ridership on weekdays, but the Saturday decline is particularly noticeable on Route 5.

Weekday productivity is one of the strong points of this route, with the second-highest productivity in the Beeline system (trailing only Route 3). A few segments experience over 100 boardings per revenue hour at certain times of day.

Route 5 is fifth among the ten weekday routes in ridership. The ridecheck identified six trips with overcrowding, two northbound in the morning and four southbound in the afternoon. All of these overcrowded trips are school-related.

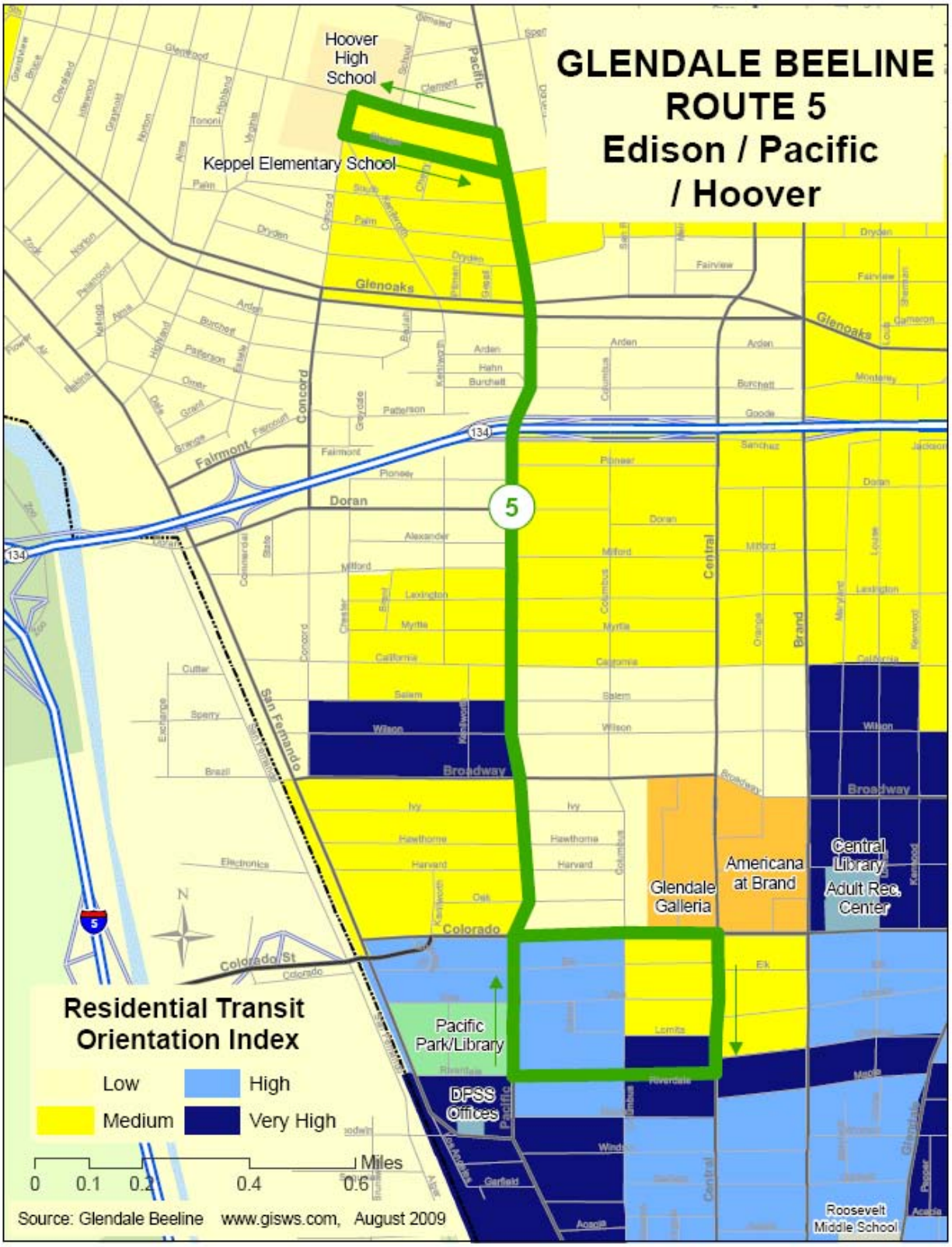
Headway and Span of Service

Table 2.38 shows Route 5 headways by day of the week. Table 2.38 also indicates the span of service on Route 5. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Route 5 operates on weekdays and Saturday only.

Table 2.38
Route 5 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	20-29	6:20 a.m. – 6:36 p.m.
Saturday	39-49	9:00 a.m. – 4:51 p.m.
Sunday	No service	

Figure 2.13
Route 5



Operating Data

Table 2.39 presents operating data for Route 5. Among the ten weekday routes, Route 5 ranks 5th in boardings and 2nd in boardings per revenue hour. Among the seven Saturday routes, Route 5 ranks last in boardings and 5th in boardings per revenue hour. As noted earlier, revenue hours in Table 2.39 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

Average trip length is 1.49 miles on weekdays and 1.31 miles on Saturday. Route 5 ranks 6th among the ten weekday routes in average trip length and 4th among the seven Saturday routes.

Table 2.39
Route 5 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	1,102	24.5	45.0	1.49
Saturday	226	8.2	27.6	1.31

Source: Ridecheck Data, November 2008

Table 2.40 presents financial data for Route 5. Route 5 ranks 2nd in subsidy per boarding and 4th in farebox recovery ratio (passenger revenue divided by operating cost) among the ten weekday routes, and 5th among the seven Saturday routes in both measures.

Table 2.40
Route 5 Financial Data

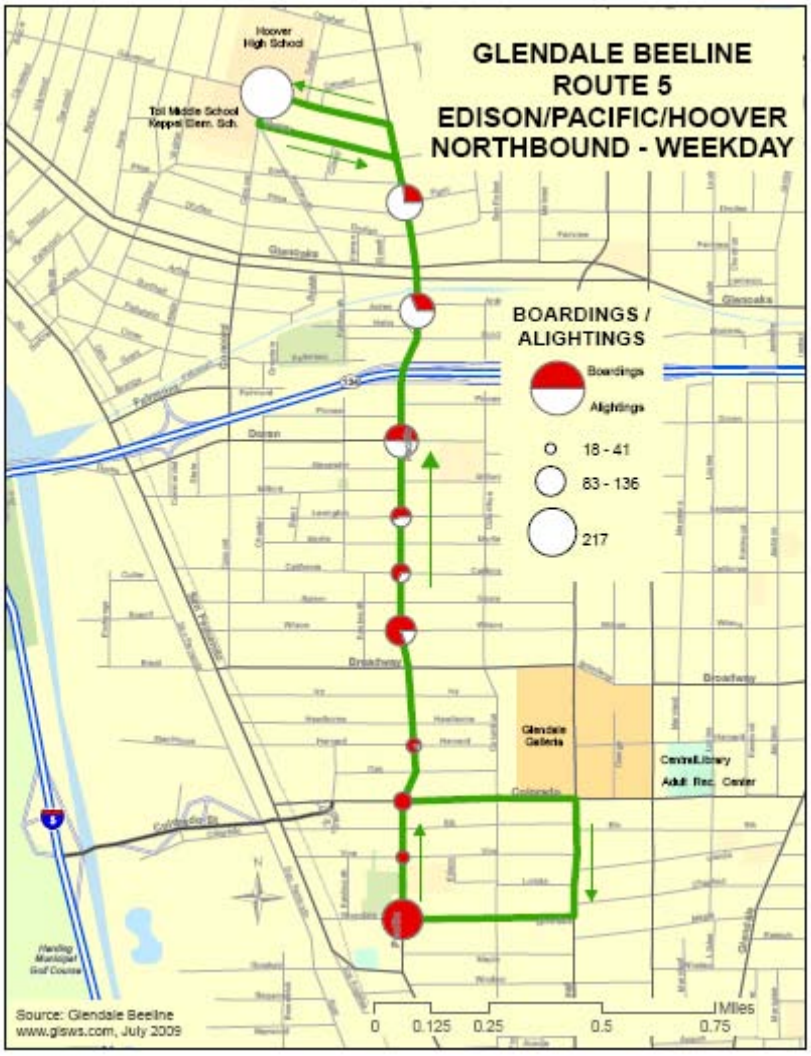
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,102	$198	$1,869	$1.70	$1.52	10.6%
Saturday	226	$41	$624	$2.76	$2.58	6.5%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figures 2.14 and 2.15 show boardings by stop and direction for weekdays and Saturday, respectively. The busiest stops (at least 100 boardings per weekday in one direction), in decreasing order of usage, include the stops at either end of the route:

- Glenwood & Concord SB (Hoover High School, Toll Middle School)
- Riverdale & Pacific NB (Pacific Edison community Center, transfer point for Beeline Route 6)

Figure 2.14
Route 5 Weekday Boardings and Alightings by Stop



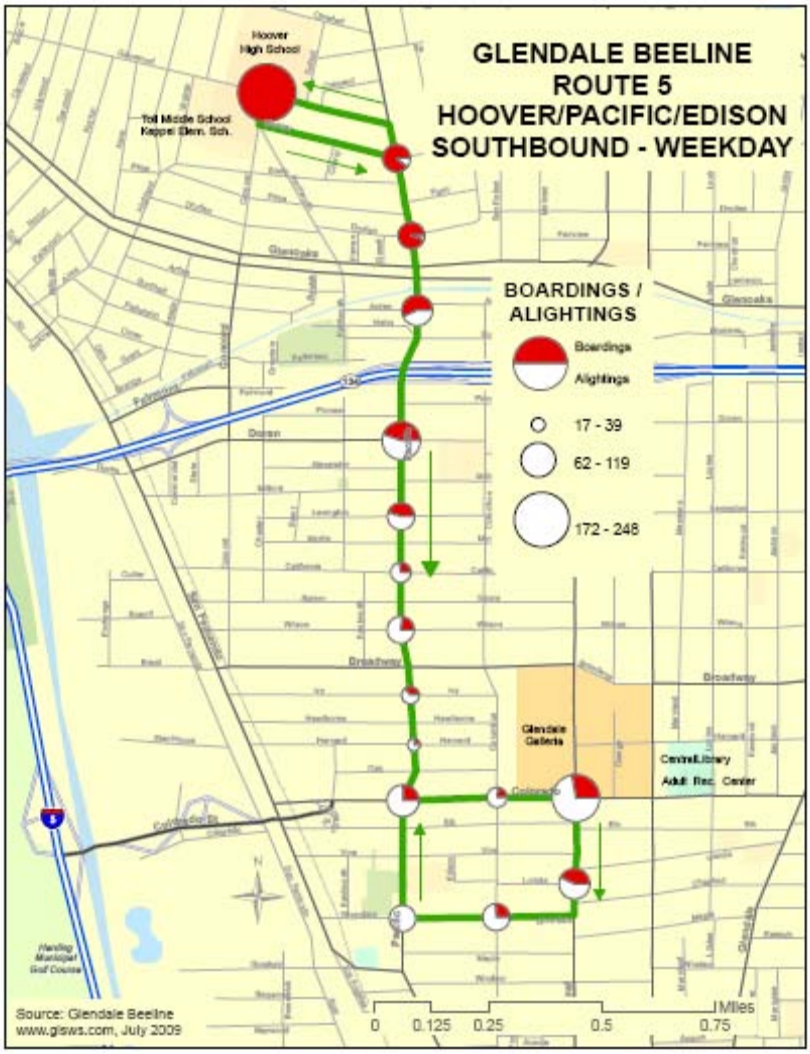

GLENDALE BEELINE
ROUTE 5
HOOVER/PACIFIC/EDISON
SOUTHBOUND - WEEKDAY
BOARDINGS / ALIGHTINGS
Boardings
Alightings
17 - 39
62 - 119
172 - 248
Hoover High School
Toll Middle School
Keppel Elem. Sch.
Glendale Galleria
Central Library
Adult Rec. Center
Source: Glendale Beeline
www.glsws.com, July 2009
0 0.125 0.25 0.5 0.75
Miles

Figure 2.15
Route 5 Saturday Boardings and Alightings by Stop


GLENDALE BEELINE
ROUTE 5
HOOVER/PACIFIC/EDISON
SOUTHBOUND - SATURDAY
BOARDINGS / ALIGHTINGS
Boardings
Alightings
3 - 16
28 - 40
99
Hoover High School
Toll Middle School
Keppel Elem. Sch.
Glendale
Doran
Broadway
Glendale Galleria
Central Library
Adult Rec. Center
Harding Municipal Golf Course
Source: Glendale Beeline
www.glsws.com, July 2009
0
0.125
0.25
0.5
0.75
Miles

Table 2.41 lists trips with segments whose loads exceed 125 percent of capacity on Route 5. Buses on Route 5 seat 30 passengers, so loads of 38 and over exceed 125 percent of capacity. These trip segments are sorted by direction and time. Six weekday trips, two northbound in the morning and four southbound in the afternoon, experienced loads exceeding 125 percent of capacity on Route 5. Nearly all overcrowded trips are school-related.

Table 2.41
Route 5 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Riverdale & Pacific – Glenwood & Concord	Weekday	NB	8:06 a.m.	10	56	School-related
Pacific & Colorado – Glenwood & Concord	Weekday	NB	8:26 a.m.	8	50	School-related
Glenwood & Concord – Pacific & Doran	Weekday	SB	3:00 p.m.	4	62	School-related
Glenwood & Concord – Pacific & Ivy	Weekday	SB	3:22 p.m.	8	61	School-related
Glenwood & Concord – Colorado & Pacific	Weekday	SB	3:42 p.m.	10	63	School-related
Pacific & Arden – Pacific & Doran	Weekday	SB	4:04 p.m.	1	39	

Source: Ridecheck Data, November 2008

Weekday Segment and Time of Day Analysis

Tables 2.42 and 2.43 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, northbound boardings at Pacific & Wilson are counted in the second segment. The data in Table 2.42 indicate a reverse-commute flow northbound in the morning and southbound at other times. Northbound ridership is highest in the segment between Riverside & Pacific and Pacific & Wilson, while southbound ridership is strongest in the segment between Glenwood & Concord and Pacific & Arden. The segment along Pacific between Doran and Arden is the weakest segment in terms of ridership.

Table 2.42
Route 5 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Riverdale & Pacific – Pacific & Wilson	207	161	104	60	71	62	32	39
Pacific & Wilson – Pacific & Doran	115	94	56	30	45	46	14	18
Pacific & Doran – Pacific & Arden	48	46	22	8	14	27	12	11
Pacific & Arden – Glenwood & Concord	64	367	9	29	8	93	47	245
Weekday Total	**434**	**668**	**191**	**127**	**138**	**228**	**105**	**313**

Source: Ridecheck data, November 2008

Table 2.43 presents productivity, in terms of boardings per revenue hour, for Route 5 by time of day and route segment. Productivity is strongest in the morning and afternoon peak periods and weakest in the midday. The most productive route/time of day segment is southbound between Glenwood & Concord and Pacific & Arden in the afternoon peak, with 172.9 boardings per revenue hour. The most productive northbound segment is in the morning peak along Pacific between Wilson and Doran (120.0 boardings per revenue hour).

Table 2.43
Route 5 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	NB	SB	NB	SB	NB	SB	NB	SB
Riverdale & Pacific – Pacific & Wilson	72.2	23.1	115.6	46.2	56.8	17.8	44.7	18.0
Pacific & Wilson – Pacific & Doran	61.1	45.9	120.0	66.7	50.9	50.2	27.1	26.3
Pacific & Doran – Pacific & Arden	36.9	25.3	88.0	17.8	22.1	31.2	30.0	22.8
Pacific & Arden – Glenwood & Concord	21.9	79.5	13.2	31.6	6.2	41.3	51.3	172.9
Weekday Total	**48.1**	**43.1**	**81.9**	**40.3**	**33.7**	**30.2**	**40.6**	**65.4**

Source: Ridecheck data, November 2008

Appendix A contains detailed information on Saturday productivity, which is highest in the midday. The most productive segment on Saturday is southbound along Pacific between Wilson and Doran in the midday, with 67.5 boardings per revenue hour. The most productive northbound segment on Saturday is between Pacific & Arden and Glenwood & Concord in the afternoon, with 41.5 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.44 shows the peak load points in either direction on Route 5 for weekday and Saturday. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.44 indicates that the peak load point for weekday travel is southbound at Pacific & Arden, with 435 passengers traveling eastbound at this location throughout the day. The maximum load point is southbound on the weekday 3:42 p.m. trip at Pacific & Arden, with 63 passengers on board.

Table 2.44
Route 5 Peak and Maximum Load Points

Measure	Day	Northbound			Southbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Pacific & Lexington	All Day	379	Pacific & Arden	All Day	435
	Saturday	Pacific & Vine	All Day	61	Pacific & Ivy	All Day	110
Maximum Load Point	Weekday	Pacific & Lexington	8:06 a.m.	56	Pacific & Doran	3:42 p.m.	63
	Saturday	Pacific & Wilson	12:25 p.m. and 2:32 p.m.	12	Pacific & Arden	11:58 a.m.	15

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.45 and 2.46 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 5 on weekdays and Saturday. Schedule adherence has declined on weekdays and Saturday on Route 5, although Saturday on-time performance is much better than weekday.

Weekday on-time performance is 93 percent at all time points, 2nd among the ten weekday routes. Southbound schedule adherence is better than northbound in the afternoon peak and overall. Schedule adherence is over 90 percent for all directions/time periods except for northbound during the afternoon, when it drops to 76 percent. Like Routes 1 and 2, Route 5 has better schedule adherence on weekdays than on Saturday.

Traffic congestion is one cause of schedule adherence problems. Two segments along Pacific Avenue (between Glenwood and Glenoaks and between S.R. 134 and Lexington) have LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on Colorado Street between Pacific and Central.

Table 2.45
Route 5 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB	NB	SB
On Time	154	161	315	39	34	77	74	38	53
Early	4	8	12	1	1	0	5	3	2
Late	12	1	13	0	0	3	1	9	0
On Time %	91%	95%	93%	98%	97%	96%	93%	76%	96%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.46) is 81 percent at all time points 3rd among the seven Saturday routes. Northbound schedule adherence is slightly better than southbound, and 100 percent of the afternoon trips are on time.

Table 2.46
Route 5 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	49	48	97	34	33	15	15
Early	2	0	2	2	0	0	0
Late	9	12	21	9	12	0	0
On Time %	82%	80%	81%	76%	73%	100%	100%

Source: Ridecheck Data, November 2008

Tables 2.47 and 2.48 show average eastbound and westbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Northbound running time is adequate throughout the day and may be too generous in the midday and afternoon periods. Southbound running time is adequate throughout the day.

Table 2.47
Route 5 Average versus Scheduled Northbound Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Riverdale & Pacific – Pacific & Wilson	6	4	4	4	4	4
Pacific & Wilson – Pacific & Doran	3	3	3	3	3	3
Pacific & Doran – Pacific & Arden	2	3	2	3	2	3
Pacific & Arden – Glenwood & Concord	5	6	4	6	5	6
Total Running Time	16	16	14	16	14	16

Source: Ridecheck data, November 2008

Table 2.48
Route 5 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Glenwood & Concord – Pacific & Arden	6	6	6	6	6	6
Pacific & Arden – Pacific & Doran	3	3	2	3	2	3
Pacific & Doran – Pacific & Wilson	3	3	2	3	3	3
Pacific & Wilson – Riverdale & Pacific	8	7	9	7	9	7
Total Running Time	20	19	20	19	20	19

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 5 is strongest in ridership and productivity on weekdays, due to the importance of school trips on this route. Over 40 percent of southbound boardings and northbound alightings take place at Hoover High School and Toll Middle School on weekdays. While all routes show the same trend of higher ridership on weekdays, the Saturday decline is particularly noticeable on Route 5.

Weekday productivity is one of the strong points of this route, with the second-highest productivity in the Beeline system (trailing only Route 3). A few segments experience over 100 boardings per revenue hour at certain times of day.

The ridecheck identified six trips with overcrowding, two northbound in the morning and four southbound in the afternoon. All of these overcrowded trips are school-related.

Schedule adherence is good, and is higher on weekdays than on Saturday. At 93 percent, Route 5 ranks second among weekday routes.

Route 5 is the only north-south route west of downtown in the Beeline network. This route plays an important role in the network, particularly for school-related travel to and from Hoover High School and Toll Middle School.

Route 6 Edison/Colorado/Glendale High

Overview

Route 6 is an east-west route that operates between Riverdale & Pacific and Broadway and Sinclair, primarily along Colorado Street (see Figure 2.16). Major destinations include Pacific Edison Community Center, the Glendale Galleria, Americana at Brand, the Adult Recreation Center, and Glendale High School.

The primary function of Route 6 is to provide east-west crosstown service along Colorado Street. Downtown and Glendale High School are the major trip generators along the route. The high school is an important trip generator, but school ridership is not the dominant factor on this route. The route connects several neighborhoods to downtown. Ridership activity is reasonably consistent across the route, with higher levels of boardings and alightings at major north-south streets.

Route 6 ridership is in the middle of the pack on both weekdays and Saturday. Productivity is relatively high, 3rd on weekdays and 4th on Saturday. The ridecheck identified only one trip with overcrowding, related to afternoon bell times at Glendale High School.

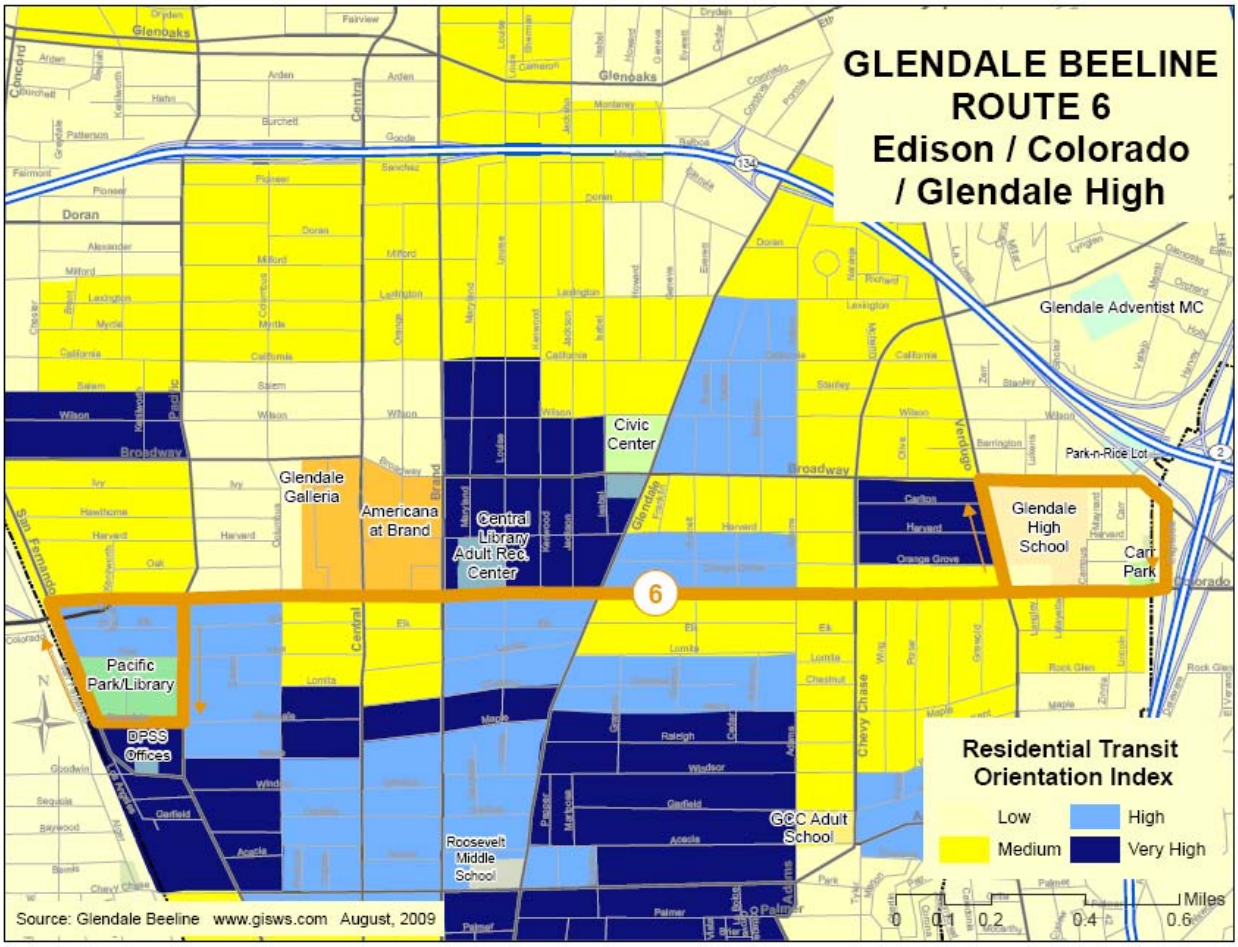
Headway and Span of Service

Table 2.49 shows Route 6 headways by day of the week. Table 2.49 also indicates the span of service on Route 6. Span of service is calculated from the start time of the first trip in the morning to the start time of the last bus in the evening. Route 6 operates on weekdays and Saturday only.

Table 2.49
Route 6 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	20-30	6:00 a.m. – 6:36 p.m.
Saturday	20-31	9:00 a.m. – 5:09 p.m.
Sunday	No service	

Figure 2.16
Route 6



Operating Data

Table 2.50 presents operating data for Route 6. Among the ten weekday routes, Route 6 ranks 6th in boardings and 3rd in boardings per revenue hour. Among the seven Saturday routes, Route 6 ranks 4th in boardings and in boardings per revenue hour. As noted earlier, revenue hours in Table 2.68 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

Average trip length is 1.37 miles on weekdays and slightly lower on Saturday. Route 6 ranks 8th among the ten weekday routes in trip length and 6th among the seven Saturday routes.

Table 2.50
Route 6 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	1,060	25.3	41.9	1.37
Saturday	449	16.2	27.7	1.22

Source: Ridecheck Data, November 2008

Table 2.51 presents financial data for Route 6. Route 6 ranks 3rd in subsidy per boarding and 5th in farebox recovery ratio (passenger revenue divided by operating cost) among the ten weekday routes, and 4th among the seven Saturday routes in both measures.

Table 2.51
Route 6 Financial Data

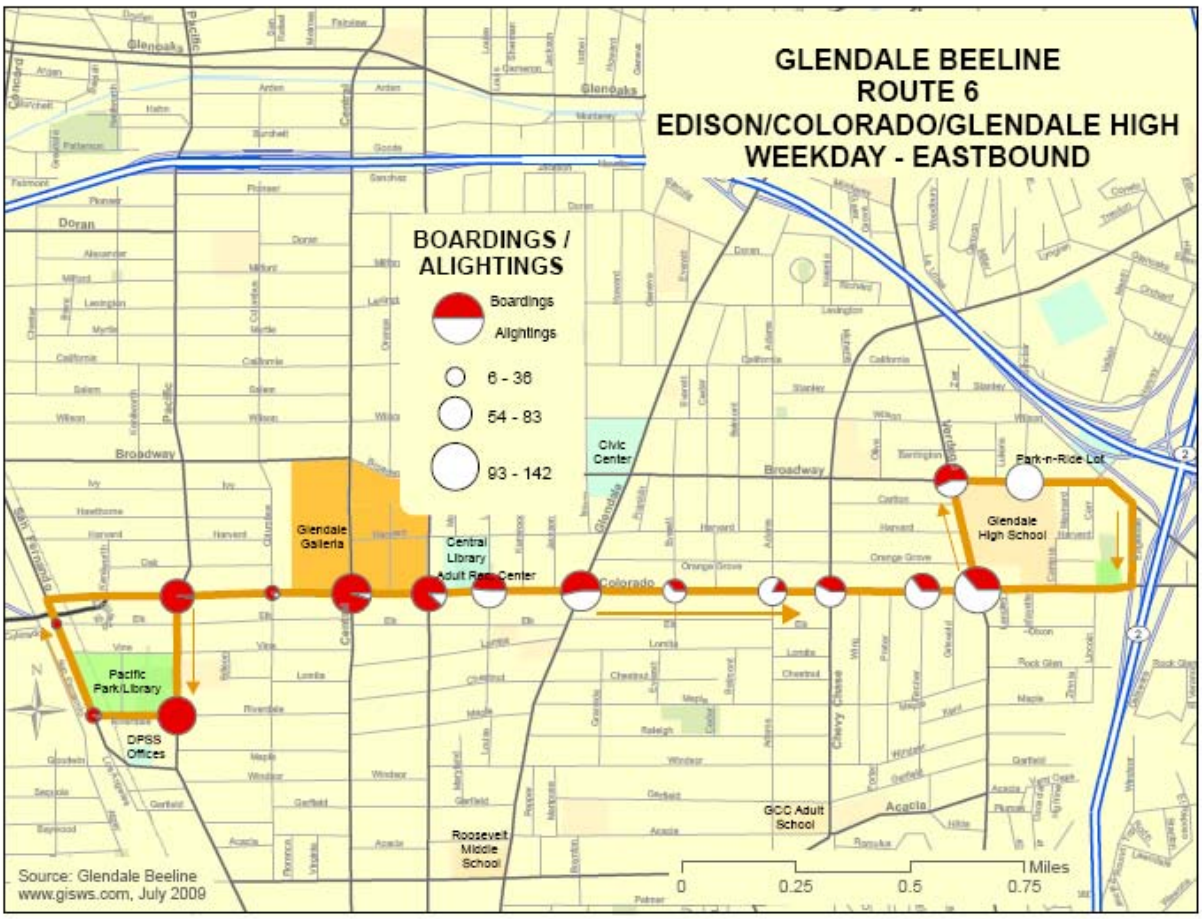
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,060	$191	$1,929	$1.82	$1.64	9.9%
Saturday	449	$81	$1,238	$2.76	$2.58	6.5%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figures 2.17 and 2.18 show boardings by stop and direction for weekdays and Saturday, respectively. There are no stops with 100 boardings per day in one direction on Route 6. Stops with at least 75 boardings per weekday include, in decreasing order of usage:

- Colorado & Central EB (Glendale Galleria, Americana at Brand, transfer point for Beeline Routes 1 and 2 and Metro Lines 180/181, 183, and 780)
- Pacific & Riverdale EB (Pacific Edison Community Center, transfer point for Beeline Route 5)
- Colorado & Verdugo WB (one of the stops for Glendale High School and transfer point for Metro Line 685).

Figure 2.17
Route 6 Weekday Boardings and Alightings by Stop




GLENDALE BEELINE
ROUTE 6
GLENDALE HIGH/COLORADO/EDISON
WEEKDAY - WESTBOUND
BOARDINGS / ALIGHTINGS
Boardings
Alightings
12 - 46
55 - 76
84 - 119
Civic Center
Park-n-Ride Lot
Glendale High School
Glendale Galleria
Central Library Adult Rec. Center
Colorado
Broadway
Pacific Park/Library
DPSS Offices
Roosevelt Middle School
GCC Adult School
Source: Glendale Beeline
www.gisws.com, July 2009
0
0.25
0.5
0.75
Miles

Figure 2.18
Route 6 Saturday Boardings and Alightings by Stop

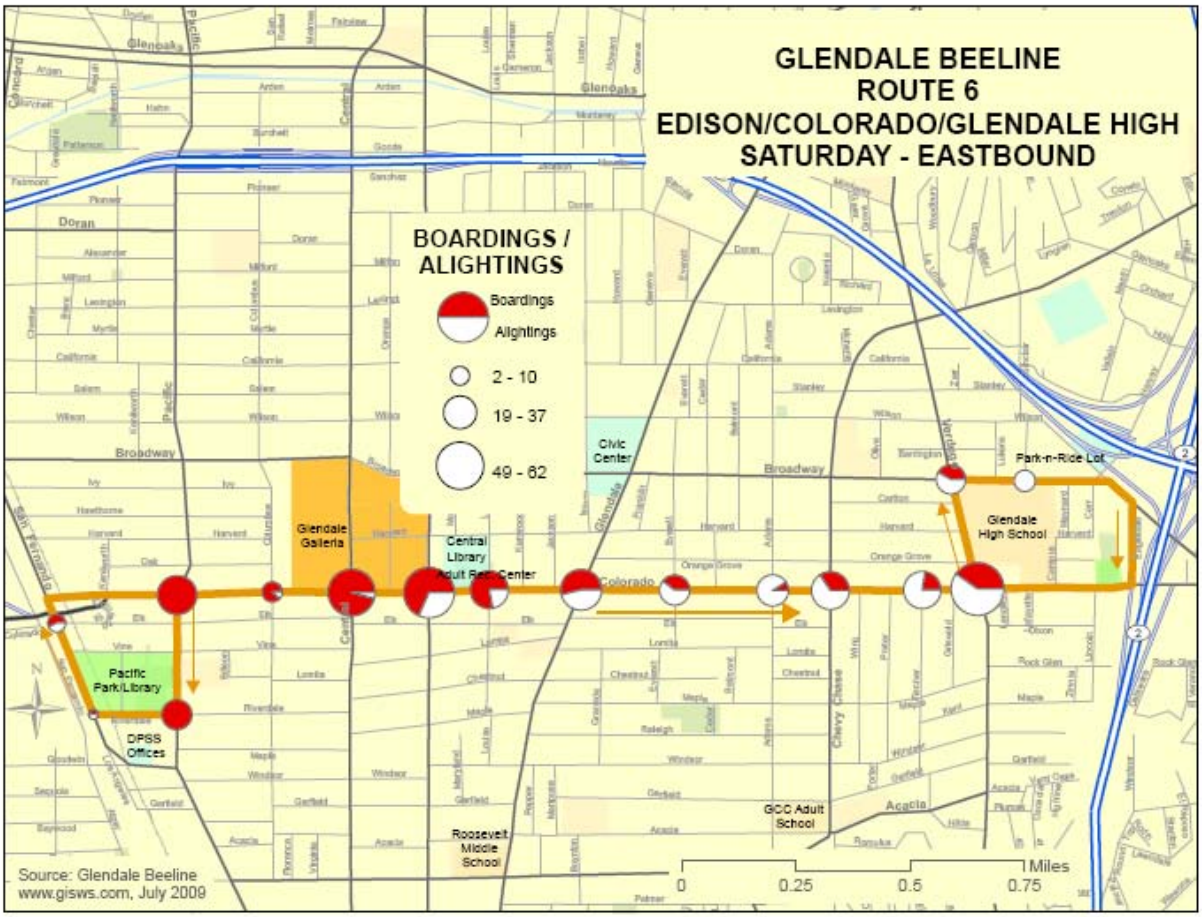


Table 2.52 lists trips with segments whose loads exceed 125 percent of capacity on Route 6. Buses on Route 6 seat 30 passengers, so loads of 38 and over exceed 125 percent of capacity. Only one westbound trip experienced overcrowding, related to bell times at Glendale High School.

Table 2.52
Route 6 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Broadway & Sinclair – Colorado & Louise	Weekday	WB	3:11 p.m.	10	51	Glendale HS

Source: Ridecheck Data, November 2008

Weekday Segment and Time of Day Analysis

Tables 2.53 and 2.54 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, eastbound boardings at Colorado & Central are counted in the second segment. Ridership is highest eastbound in all time periods, due in part to westbound passengers boarding Route 6 near Glendale High School before the eastern end of the line. Ridership is highest eastbound

along the segments between Pacific & Riverdale and Colorado & Central and between Colorado & Central and Colorado & Glendale. Westbound boardings are greatest along the segment between Broadway & Sinclair and Colorado & Chevy Chase, particularly during the midday and afternoon peak periods.

Table 2.53
Route 6 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Pacific & Riverdale – Colorado & Central/Brand	202	14	44	4	108	7	50	3
Colorado & Central/Brand – Colorado & Glendale	210	48	48	12	94	27	68	9
Colorado & Glendale – Colorado & Chevy Chase	79	89	34	33	34	30	11	26
Colorado & Chevy Chase – Broadway & Sinclair	150	268	22	33	70	132	58	103
Weekday Total	**641**	**419**	**148**	**82**	**306**	**196**	**187**	**141**

Source: Ridecheck data, November 2008

Table 2.54 presents productivity, in terms of boardings per revenue hour, for Route 6 by time of day and route segment. Productivity is very throughout the day in the eastbound direction, while westbound productivity is highest in the afternoon. The most productive route/time of day segment is eastbound between along Colorado between Central and Glendale in the afternoon peak (116.6 boardings per revenue hour). The most productive westbound segment is between Broadway & Sinclair and Colorado & Chevy Chase, with 84.7 boardings per revenue hour in the afternoon peak.

Table 2.54
Route 6 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Pacific & Riverdale – Colorado & Central/Brand	53.6	3.1	61.4	3.9	57.9	3.2	42.3	3.4
Colorado & Central/Brand – Colorado & Glendale	86.9	22.7	72.0	20.0	81.7	26.6	116.6	19.3
Colorado & Glendale – Colorado & Chevy Chase	38.9	34.0	75.6	52.1	34.6	24.0	18.9	36.3
Colorado & Chevy Chase – Broadway & Sinclair	51.1	55.4	31.4	29.1	56.0	53.5	60.0	84.7
Weekday Total	**57.3**	**29.7**	**58.0**	**23.9**	**57.9**	**28.2**	**55.8**	**37.9**

Source: Ridecheck data, November 2008

Appendix A contains detailed information on Saturday productivity, which is highest in the midday. The most productive segment on Saturday is eastbound along Colorado between Central and Glendale in the afternoon, with 74.4 boardings per revenue hour. The most productive westbound segment on Saturday is between Broadway & Sinclair and Colorado & Chevy Chase in the midday, with 42.8 boardings per revenue hour.

Peak Load and Maximum Load

Table 2.55 shows the peak load points in either direction on Route 6 for weekday and Saturday. For the peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For the maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.55 indicates that the peak load point for weekday travel is westbound at Colorado & Everett, with 390 passengers traveling west at this location throughout the day. The maximum load point is westbound on the weekday 3:11 p.m. trip at Colorado & Verdugo, with 51 riders on board. This stop is near Glendale High School.

Table 2.55
Route 6 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Colorado & Glendale	All Day	369	Colorado & Everett	All Day	390
	Saturday	Colorado & Glendale	All Day	154	Colorado & Adams	All Day	165
Maximum Load Point	Weekday	Colorado & Chevy Chase	7:20 a.m.	35	Colorado & Verdugo	3:11 p.m.	51
	Saturday	Colorado & Brand	2:48 p.m.	15	Colorado & Verdugo; Colorado & Chevy Chase	11:41 a.m.; 2:15 p.m.	17

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.56 and 2.57 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 6 on weekdays and Saturday. Weekday on-time performance is 65 percent at all time points, 9th among the ten weekday routes. Schedule adherence is particularly poor in the midday in both directions and westbound in the afternoon peak. On-time performance is better in the eastbound direction in all time periods except the morning peak.

Traffic congestion is one cause of schedule adherence problems. No segment of Route 6 operates along streets with LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on San Fernando Road between Riverside and Colorado and along Colorado Street between Pacific and Central.

Table 2.56
Route 6 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	121	102	223	37	31	50	45	34	26
Early	9	6	15	4	1	2	4	3	1
Late	45	59	104	4	3	33	36	8	20
On Time %	69%	61%	65%	82%	89%	59%	53%	76%	55%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.57) is 88 percent at all time points, 1st among the seven Saturday routes. Eastbound schedule adherence is better than westbound. Early departures are a problem westbound in the midday on Saturday.

Table 2.57
Route 6 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB
On Time	102	96	198	75	65	27	31
Early	2	13	15	2	12	0	1
Late	6	6	12	3	3	3	3
On Time %	93%	83%	88%	94%	81%	90%	89%

Source: Ridecheck Data, November 2008

Tables 2.58 and 2.59 show average eastbound and westbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Eastbound running time could be increased, particularly in the afternoon. Westbound running time is adequate.

Table 2.58
Route 6 Average versus Scheduled Eastbound Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Pacific & Riverdale – Colorado & Central	5	6	6	6	7	6
Colorado & Central – Colorado & Glendale	4	3	4	3	3	3
Colorado & Glendale – Colorado & Chevy Chase	3	3	3	3	3	3
Colorado & Chevy Chase – Broadway & Sinclair	5	4	4	4	6	4
Total Running Time	17	16	18	16	19	16

Source: Ridecheck data, November 2008

Table 2.59
Route 6 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Broadway & Sinclair – Colorado & Chevy Chase	5	6	6	6	6	6
Colorado & Chevy Chase – Colorado & Glendale	3	3	3	3	4	3
Colorado & Glendale – Colorado & Central	3	4	3	4	2	4
Colorado & Central – Pacific & Riverdale	5	5	6	5	6	5
Total Running Time	16	18	18	18	17	18

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 6 ridership is in the middle of the pack on both weekdays and Saturday. Productivity is relatively high, 3rd on both weekdays and Saturday.

The ridecheck identified only one trip with overcrowding, related to afternoon bell times at Glendale High School.

Schedule adherence is poor on weekdays but ranks first on Saturday. Running times are generally adequate, although eastbound weekday trips may need additional time.

Route 6 is a crosstown route with three significant trip generators: Glendale Galleria and Americana at Brand downtown and Glendale High School. The route performs acceptably and provides an important east-west connection along Colorado Street. Schedule adherence is an issue that deserves closer attention.

Route 7 West Glendale to GCC

Overview

Route 7 is an east-west route that operates between Victory Boulevard & Western Avenue in west Glendale and Glendale Community College (see Figure 2.19). Primary streets of operation include Western Avenue, Glenoaks Boulevard, and Stocker Street. Major destinations include Glendale Community College, Hoover High School, and Toll Middle School.

The primary function of Route 7 is to connect the western part of Glendale with Hoover High School, Toll Middle School, and GCC. The effects of student ridership can be seen in much lower Saturday ridership, a similar trend to that noted for Route 5. Route 7 is 3rd among Beeline routes in terms of ridership. The ridecheck identified nine trips with overcrowding, three eastbound in the morning and six westbound in the midday and afternoon. School-related boardings are the primary cause of the overcrowded trips.

Productivity is in the middle of the pack on weekdays and is lowest of all Saturday routes. The difference in ridership and productivity rankings is attributable to the high number of revenue hours on this route, which is one of the longest in the Beeline system. Saturday performance is related primarily to low ridership.

Schedule adherence is poor on weekdays, especially in the afternoon. An analysis of running times suggests that more time needs to be provided in the afternoon schedules in both directions. Route 7 has the longest average trip lengths of any Beeline route.

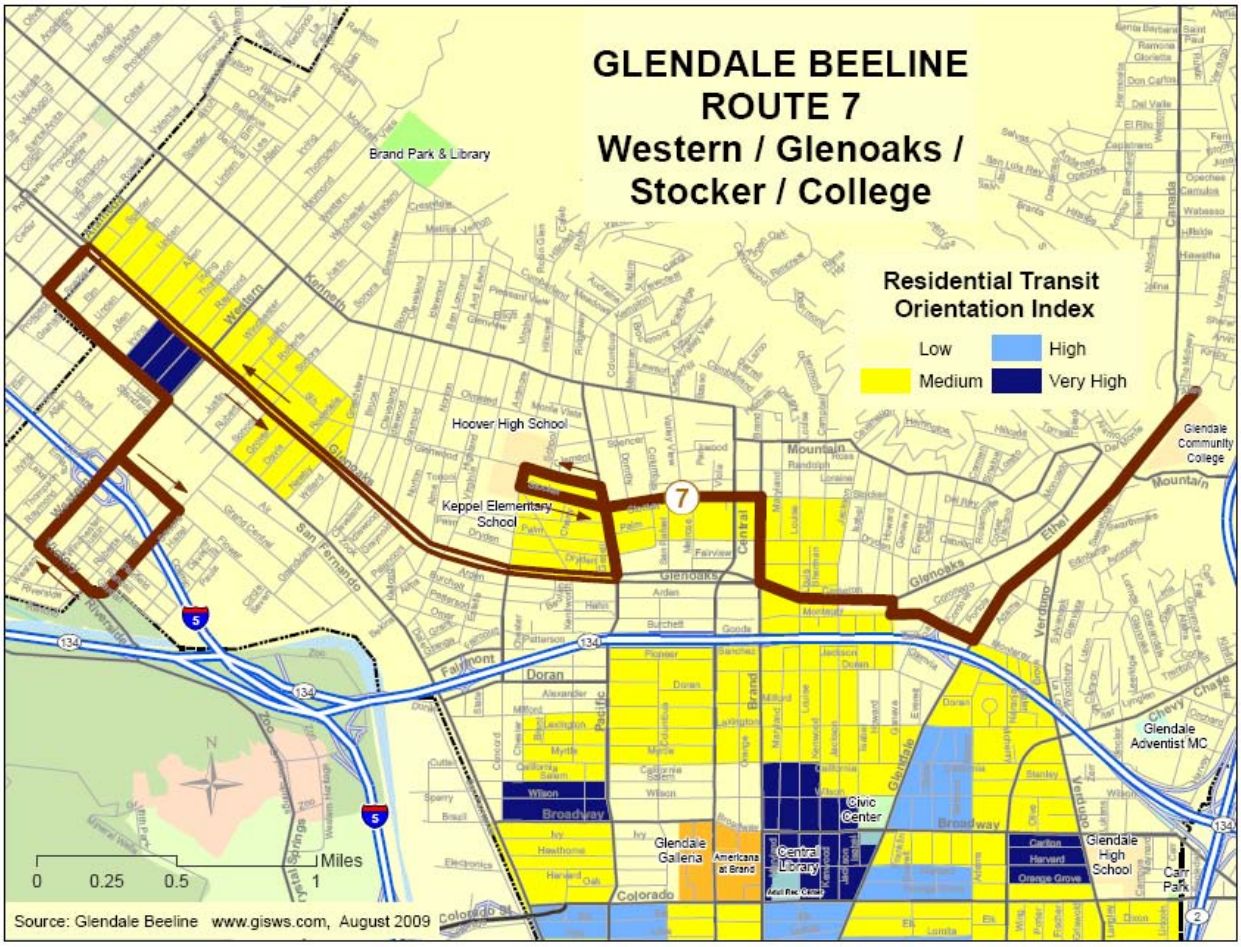
Headway and Span of Service

Table 2.60 shows Route 7 headways by day of the week. Table 2.78 also indicates the span of service on Route 7. Span of service is calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. Route 7 operates on weekdays and Saturday.

Table 2.60
Route 7 Headway and Span of Service

Day of Week	Headway (minutes)	Span of Service
Weekday	21-37	6:00 a.m. – 6:29 p.m.
Saturday	40-50	9:00 a.m. – 4:39 p.m.
Sunday	No service	

Figure 2.19
Route 7



Operating Data

Table 2.61 presents operating data for Route 7. Among the ten weekday routes, Route 7 ranks 3rd in boardings and 5th in boardings per revenue hour. Among the seven Saturday routes, Route 7 ranks 6th in boardings and last in boardings per revenue hour. As noted earlier, revenue hours in Table 2.61 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

Average trip length is 3.47 miles on weekdays and 2.93 on Saturday, the longest average trip lengths of any Beeline route.

Table 2.61
Route 7 Operating and Productivity Data

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	1,632	39.2	41.6	3.47
Saturday	243	15.8	15.4	2.93

Source: Ridecheck Data, November 2008

Table 2.62 presents financial data for Route 7. Route 7 ranks 5th in subsidy per boarding and 7th in farebox recovery ratio (passenger revenue divided by operating cost) among the ten weekday routes. On Saturday, Route 7 ranks last in both measures.

Table 2.62
Route 7 Financial Data

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	1,632	$294	$2,992	$1.83	$1.65	9.8%
Saturday	243	$44	$1,204	$4.96	$4.78	3.6%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

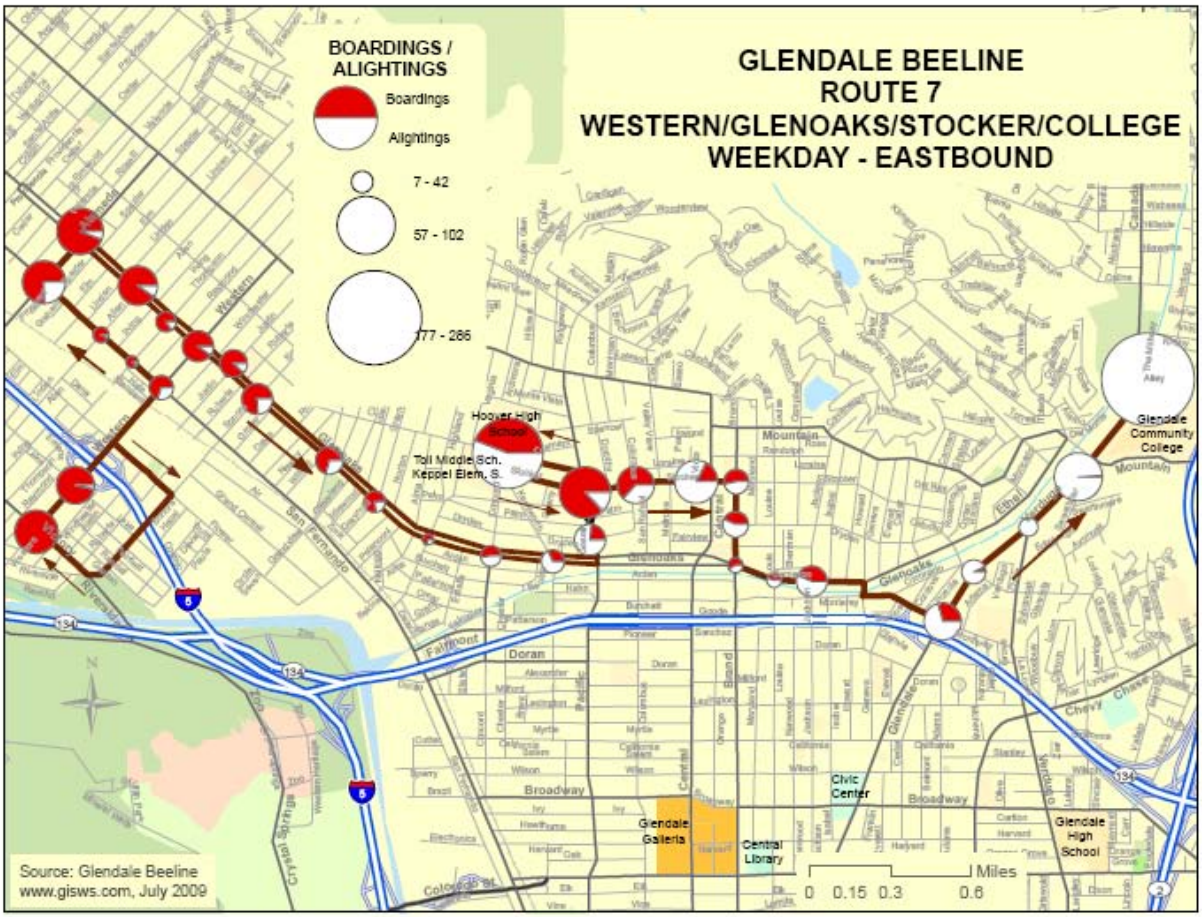
Figures 2.20 and 2.21 show boardings by stop and direction for weekdays and Saturday. The busiest stop (and the only one with at least 100 boardings per weekday in one direction) is:

- Verdugo & Towne WB (Glendale Community College)

Stops with at least 75 boardings per weekday in one direction include, in decreasing order of usage:

- Stocker & Pacific EB (near Hoover High School and Toll Middle School)
- Glenwood & Concord WB (Hoover High School and Toll Middle School)
- Alameda & Glenoaks EB (Connection to Burbank Bus)
- Glenwood opposite Concord EB (Hoover High School and Toll Middle School)
- Victory & Western (Connection to Metro 68)

Figure 2.20
Route 7 Weekday Boardings and Alightings by Stop



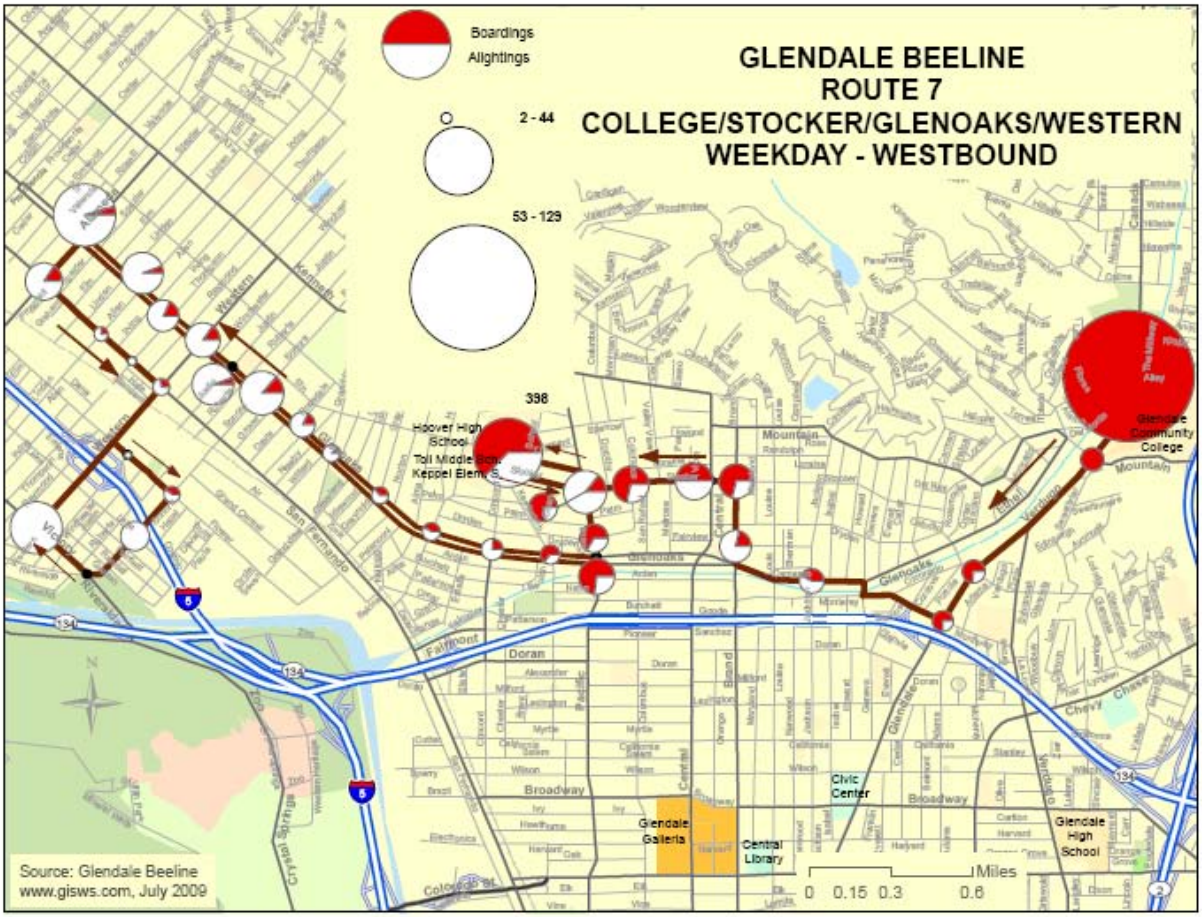
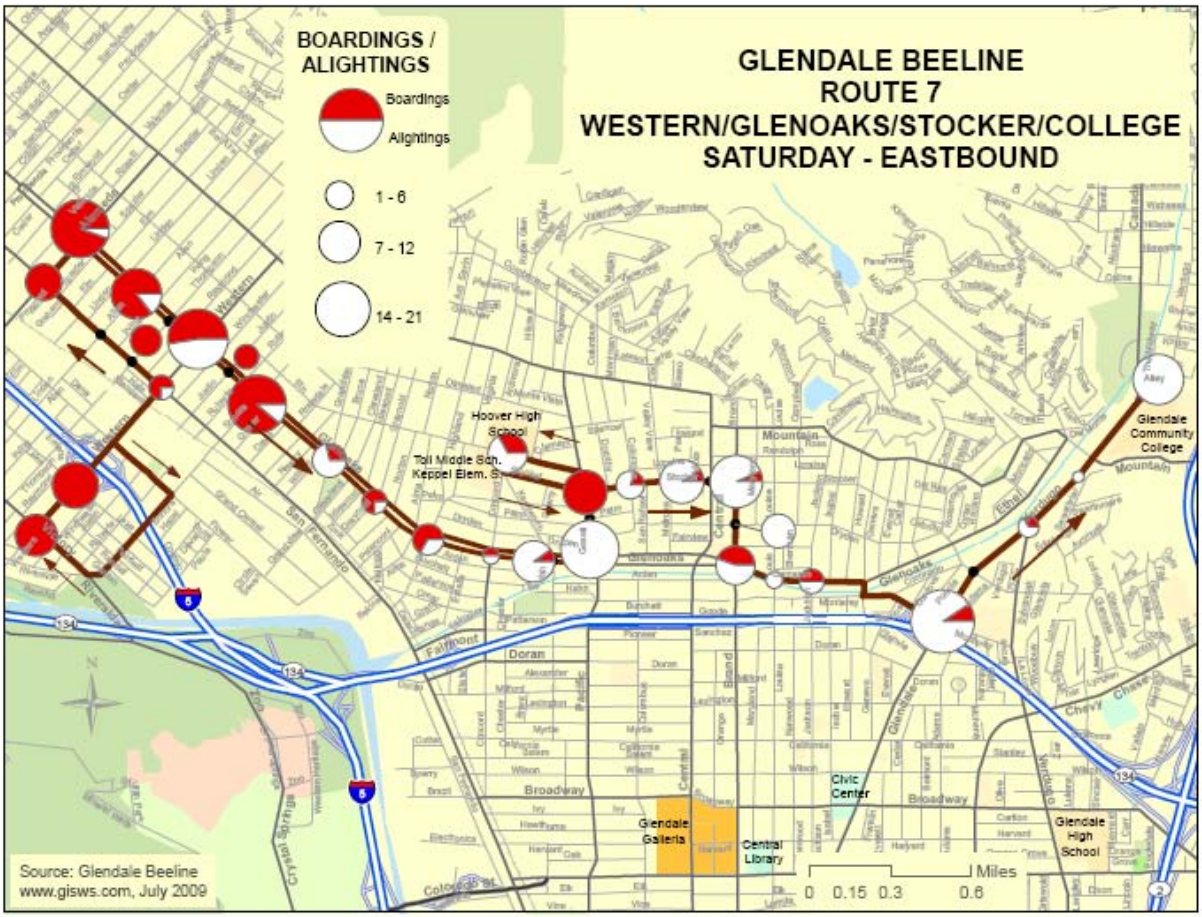

Boardings
Alightings
2 - 44
53 - 129
398
GLENDALE BEELINE
ROUTE 7
COLLEGE/STOCKER/GLENOAKS/WESTERN
WEEKDAY - WESTBOUND
Hoover High School
Toll Middle Sch
Keppel Elem S
Glendale Community College
Mountain
Glenoaks
Doran
Broadway
Civic Center
Glendale Galleria
Central Library
Glendale High School
Miles
0 0.15 0.3 0.6
Source: Glendale Beeline
www.gisws.com, July 2009

Figure 2.21
Route 7 Saturday Boardings and Alightings by Stop



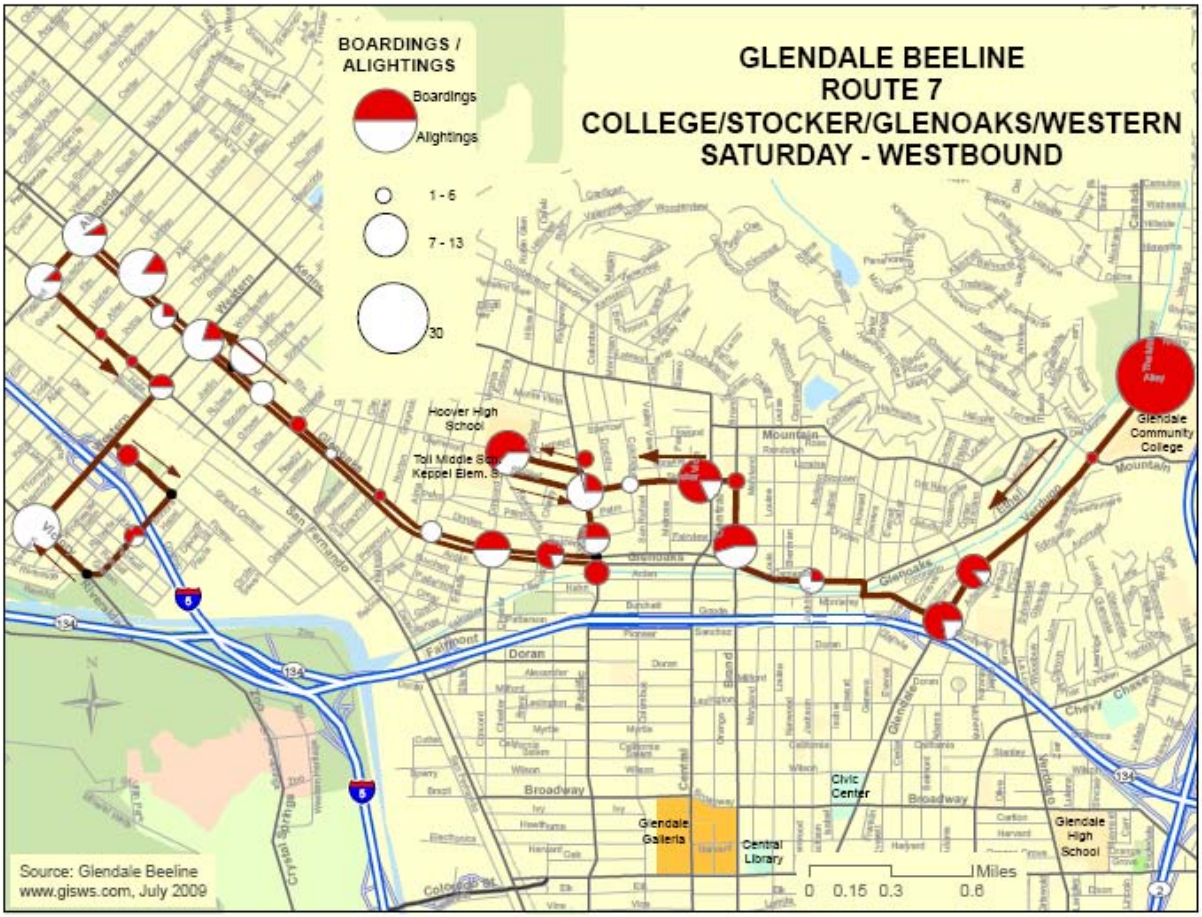

BOARDINGS / ALIGHTINGS
Boardings
Alightings
1 - 6
7 - 13
30
GLENDALE BEELINE
ROUTE 7
COLLEGE/STOCKER/GLENOAKS/WESTERN
SATURDAY - WESTBOUND
Hoover High School
Toll Middle Sch
Keppel Elem. S
Glendale Community College
Doran
Broadway
Civic Center
Glendale Galleria
Central Library
Glendale High School
Source: Glendale Beeline
www.gisws.com, July 2009
Miles
0 0.15 0.3 0.6

Table 2.63 lists trips with segments whose loads exceed 125 percent of capacity on Route 7. Buses on Route 7 seat 30 passengers, so loads of 38 and over exceed 125 percent of capacity. These trip segments are sorted by direction and time. Nine trips experienced overcrowding related to bell times at Glendale Community College, Hoover High School, and Toll and Wilson Middle School. Three of the overcrowded trips were eastbound in the morning, and six were in the westbound direction during the midday and afternoon periods.

Table 2.63
Route 7 Trip Segments with Loads Exceeding 125 Percent of Capacity

Segment	Day	Direction	Trip Time	Number of Stops	Peak Load	Comments
Glenoaks & Allen – Glenwood opp. Concord; Stocker & Pacific – Glendale & Verdugo	Weekday	EB	6:54 a.m.	21	55	School-related and GCC-related
San Fernando & Western – Glenwood opp. Concord; Brand & Dryden – Verdugo & Glendale College	Weekday	EB	7:21 a.m.	24	67	School-related and GCC-related
Brand & Dryden – Glendale & Glenoaks	Weekday	EB	7:48 a.m.	5	41	School- and GCC-related
Verdugo & Towne – Glenwood & Concord	Weekday	WB	11:51 a.m.	12	56	GCC-related
Glenwood & Concord – Glenoaks & Concord	Weekday	WB	2:06 p.m.	5	40	School-related
Glenwood & Concord – Glenoaks & Allen	Weekday	WB	2:40 p.m.	14	50	School- and GCC-related
Verdugo & Towne – Glenoaks & Thompson	Weekday	WB	3:12 p.m.	25	49	GCC-related
Stocker & Pacific– Glenoaks & Justin	Weekday	WB	3:40 p.m.	10	50	School- and GCC-related
Verdugo & Mountain – Stocker & Central; Glenwood & Concord – Glenoaks & Thompson	Weekday	WB	4:10 p.m.	21	52	School and GCC-related

Source: Ridecheck Data, November 2008

Weekday Segment and Time of Day Analysis

Tables 2.64 and 2.65 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, eastbound boardings at Glenoaks & Western are counted in the second segment. Ridership demand is predominantly eastbound in the morning, balanced in the midday, and westbound in the afternoon. Eastbound boardings are highest in the segment between Victory & Western and Glenoaks & Western, while westbound boardings are highest in the segment between Verdugo & Glendale College and Glendale & Monterey.

Table 2.64
Route 7 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Victory & Western – Glenoaks & Western	380	36	191	10	142	15	47	11
Glenoaks & Western – Glenwood & Concord	175	29	43	6	93	16	39	7
Glenwood & Concord – Glenoaks & Brand	244	259	73	41	110	98	61	120
Glenoaks & Brand – Glendale & Monterey	30	21	11	6	18	13	1	2
Glendale & Monterey – Verdugo & Glendale College	20	438	6	25	11	240	3	173
Weekday Total	**849**	**783**	**324**	**88**	**374**	**382**	**151**	**313**

Source: Ridecheck data, November 2008

Table 2.65 presents productivity, in terms of boardings per revenue hour, for Route 7 by time of day and route segment. Productivity is higher in the eastbound direction early in the day and in the westbound direction later in the day. The most productive route/time of day segment is westbound between Verdugo & Glendale College and Glenoaks & Monterey in the afternoon peak (220.9 boardings per revenue hour). The most productive eastbound segment is between Victory & Western and Glenoaks & Western, with 114.6 boardings per revenue hour in the morning peak.

Table 2.65
Route 7 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Victory & Western – Glenoaks & Western	71.5	6.1	114.6	7.7	58.0	5.1	39.2	6.5
Glenoaks & Western – Glenwood & Concord	31.4	7.8	36.3	7.8	36.2	8.5	21.7	6.5
Glenwood & Concord – Glenoaks & Brand	65.9	46.8	85.9	29.3	61.1	36.1	59.0	85.7
Glenoaks & Brand – Glendale & Monterey	11.5	10.9	19.4	13.3	16.4	14.4	1.1	3.5
Glendale & Monterey – Verdugo & Glendale College	9.8	160.2	10.9	38.5	10.0	184.6	7.8	220.9
Weekday Total	**44.0**	**39.3**	**66.6**	**19.1**	**41.3**	**39.2**	**28.2**	**56.2**

Source: Ridecheck data, November 2008

Peak Load and Maximum Load

Table 2.66 shows the peak load points in either direction on Route 7 for weekday and Saturday. For the peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For the maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.66 indicates that the peak load point for weekday travel is eastbound at Stocker & Columbus, with 500 passengers traveling east at this location throughout the day. The maximum load point is eastbound on the weekday 7:21 a.m. trip at Glenoaks & Highland, with 89 riders on board.

Table 2.66
Route 7 Peak and Maximum Load Points

Measure	Day	Eastbound			Westbound		
		Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Weekday	Stocker & Columbus	All Day	500	Glenoaks & Kenilworth	All Day	485
	Saturday	Glenoaks & Highland	All Day	89	Glenoaks & Kenilworth	All Day	57
Maximum Load Point	Weekday	Glenoaks & Thompson	7:21 a.m.	67	Verdugo & Towne	11:51 a.m.	56
	Saturday	Glenoaks & Graynold	11:49 a.m.	17	Glenwood & Concord; Monterey & Glendale	9:36 a.m. and 10:13 a.m.; 1:45 p.m.	9

Source: Ridecheck data, November 2008

Schedule Adherence

Tables 2.67 and 2.68 present schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 7 on weekdays and Saturday. Weekday on-time performance is 49 percent at all time points, last among the ten weekday routes. Schedule adherence is particularly poor in the afternoon in both directions. On-time performance is better in the eastbound direction in all time periods, rising to 76 percent eastbound in the midday.

Traffic congestion is one cause of schedule adherence problems. One segment along Pacific Avenue (between Glenoaks and Glenwood) has LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on Western Avenue between Victory and Flower, on Monterey Road between Geneva and Coronado and on Glendale Avenue between Glenoaks and Verdugo.

Table 2.67
Route 7 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	85	63	148	25	21	55	41	5	1
Early	5	2	12	2	1	3	1	0	0
Late	57	92	149	15	14	14	36	28	42
On Time %	58%	40%	49%	60%	58%	76%	53%	15%	2%

Source: Ridecheck Data, November 2008

Saturday on-time performance (Table 2.68) is 79 percent at all time points, 4th among the seven Saturday routes. The absence of heavy school-related loads results in improved scheduled adherence. Eastbound schedule adherence is better than westbound in the midday.

Table 2.68
Route 7 Saturday Schedule Adherence

Actual vs. Schedule	All Day			Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB
On Time	61	48	109	46	33	15	15
Early	3	2	5	1	2	2	0
Late	8	16	24	7	13	1	3
On Time %	85%	73%	79%	85%	69%	83%	83%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.69 and 2.70 show average northbound and southbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Actual running time exceeds scheduled running time by four minutes eastbound and by six minutes westbound during the afternoon peak period. Midday running times are adequate.

Table 2.69
Route 7 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Victory & Western – Glenoaks & Western	14	10	11	10	8	10
Glenoaks & Western – Glenwood & Concord	10	11	11	11	13	10
Glenwood & Concord – Glenoaks & Brand	7	7	8	7	7	7
Glenoaks & Brand – Glendale & Monterey	5	4	5	4	8	4
Glendale & Monterey – Verdugo & Glendale College	5	4	5	4	3	4
Total Running Time	30	28	29	28	39	35

Source: Ridecheck data, November 2008

Table 2.70
Route 7 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Verdugo & Towne – Monterey & Glendale	6	5	5	5	6	5
Monterey & Glendale – Brand & Fairview	4	4	4	4	5	4
Brand & Fairview – Glenoaks & Concord	12	8	11	8	11	8
Glenoaks & Concord – Glenoaks & Western	7	10	7	10	9	10
Glenoaks & Western – Victory & Western	11	12	12	12	14	12
Total Running Time	28	27	27	27	45	39

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Route 7 weekday ridership is strong, driven primarily by Glendale College, Hoover High School, and two middle schools along the route. The effects of student ridership can be seen in much lower Saturday ridership.

Productivity is in the middle of the pack on weekdays and is lowest of all Saturday routes. Route 7 has the second highest total of revenue hours on weekdays, while Saturday performance is related primarily to low ridership.

The ridecheck identified nine trips with overcrowding, three eastbound in the morning and six westbound in the midday and afternoon. School-related boardings are the primary cause of the overcrowded trips.

Schedule adherence is poor on weekdays, especially in the afternoon. An analysis of running times suggests that more time needs to be provided in the afternoon schedules in both directions. Route 7 has the longest average trip lengths of any Beeline route.

Route 7 provides an important east-west connection in the northern part of the City of Glendale. Glendale College, Hoover High School, and Toll Middle School are the most important destinations served by this route. Overcrowded trips, schedule adherence, and low Saturday usage are topics for further analysis in Chapter 8.

Route 11 Metrolink Express: Downtown Glendale

Overview

Route 11 is one of the two express routes in the Beeline network. Route 11 is scheduled to meet Metrolink trains at the Glendale Transportation Center (GTC). Route 11 operates between the GTC and Downtown Glendale, with stops along Brand Boulevard, Wilson Avenue, and Colorado Street (see Figure 2.22). Morning service travels in the northbound direction only, and afternoon service travels only in the southbound direction.

The primary function of Route 11 is to provide a timely connection between Metrolink and downtown Glendale for workers in downtown. Ridership is higher on Route 11 than on the other Metrolink Express route (Route 12). Productivity is higher on Route 11 than on some local Beeline routes. A few trips at the shoulders of the peak periods do not carry many passengers.

Headway and Span of Service

Table 2.71 shows Route 11 headways by time of day and day of the week. Headways are less meaningful for Routes 11 and 12, since departure times are scheduled to match Metrolink timetables. Table 2.71 also indicates the span of service, calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. The express lines operate on weekdays only.

Table 2.71
Route 11 Headway and Span of Service – Weekday Only

Day of Week	Time of Day	Headway (minutes)	Span of Service
Weekday	Morning Afternoon	13-46 7-35	6:03 – 9:07 a.m. 2:48 – 6:12 p.m.

Operating Data

Table 2.72 presents operating data for Route 11. Among the ten weekday routes, Route 11 ranks 8th in boardings and 7th in boardings per revenue hour. As noted earlier, revenue hours in Table 2.72 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours. Average trip length is 2.6 miles, 3rd among the ten weekday routes.

Table 2.72
Route 11 Operating and Productivity Data – Weekday Only

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	389	11.6	33.4	2.62

Source: Ridecheck Data, November 2008

Figure 2.22
Route 11

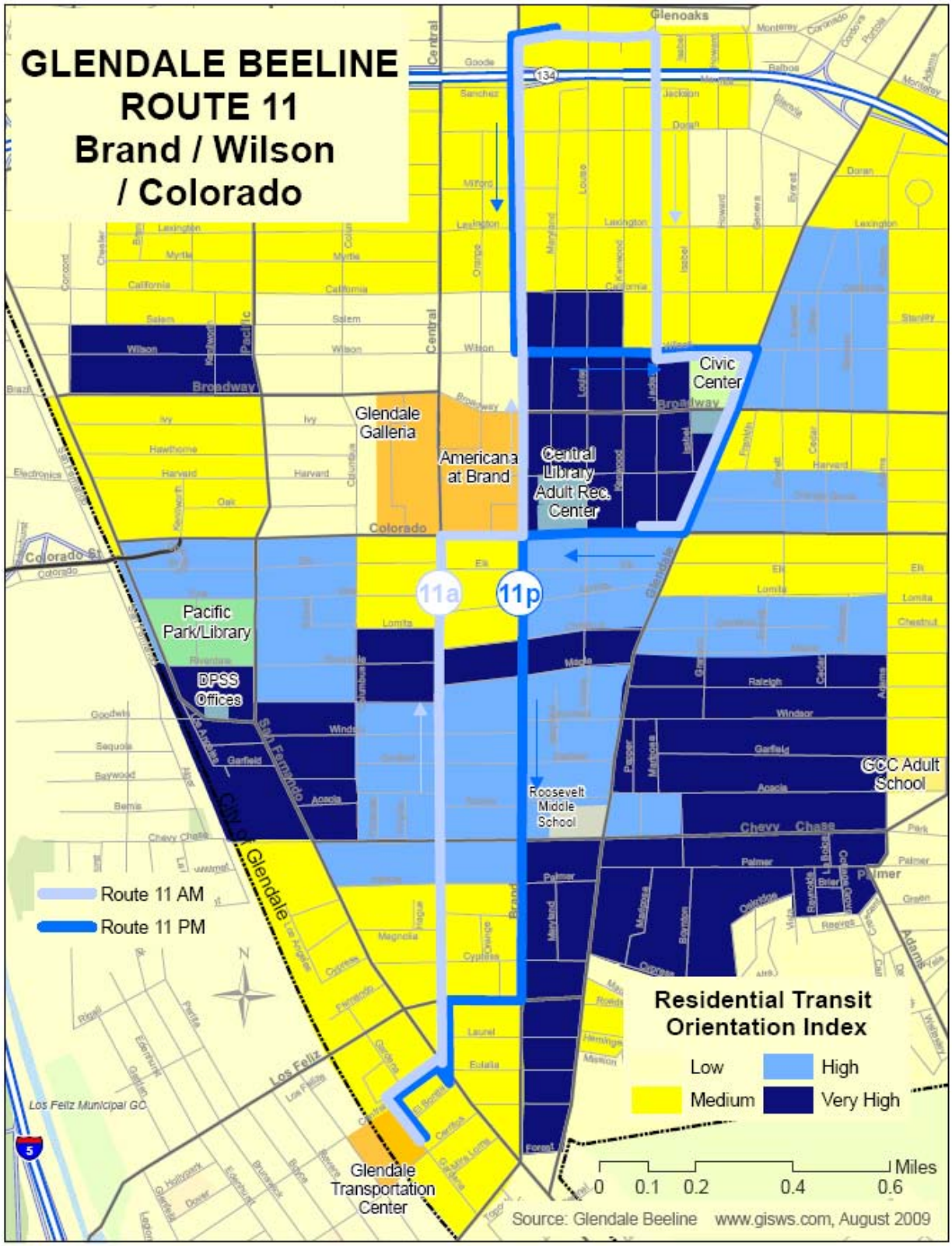


Table 2.73 presents financial data for Route 11. Route 11 is 6th among the ten weekday routes in subsidy per passenger and 1st among the ten weekday routes in farebox recovery ratio (passenger revenue divided by operating cost). Higher fares contribute to the strong farebox recovery ratio.

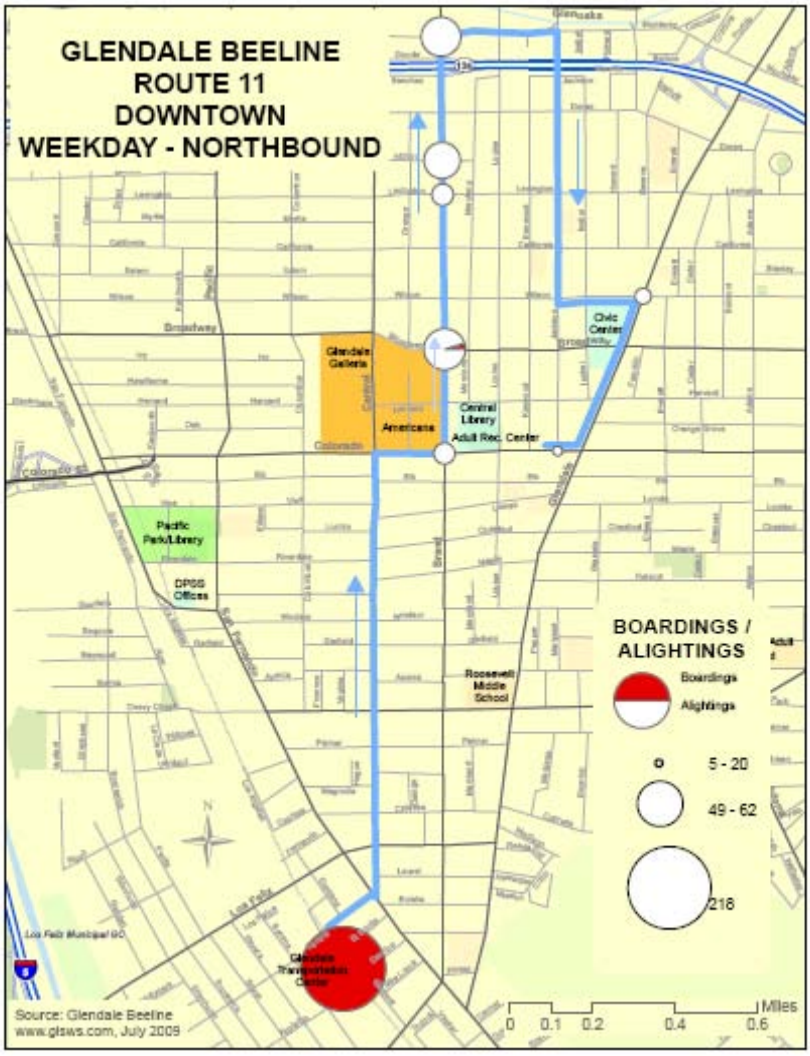
Table 2.73
Route 11 Financial Data – Weekday Only

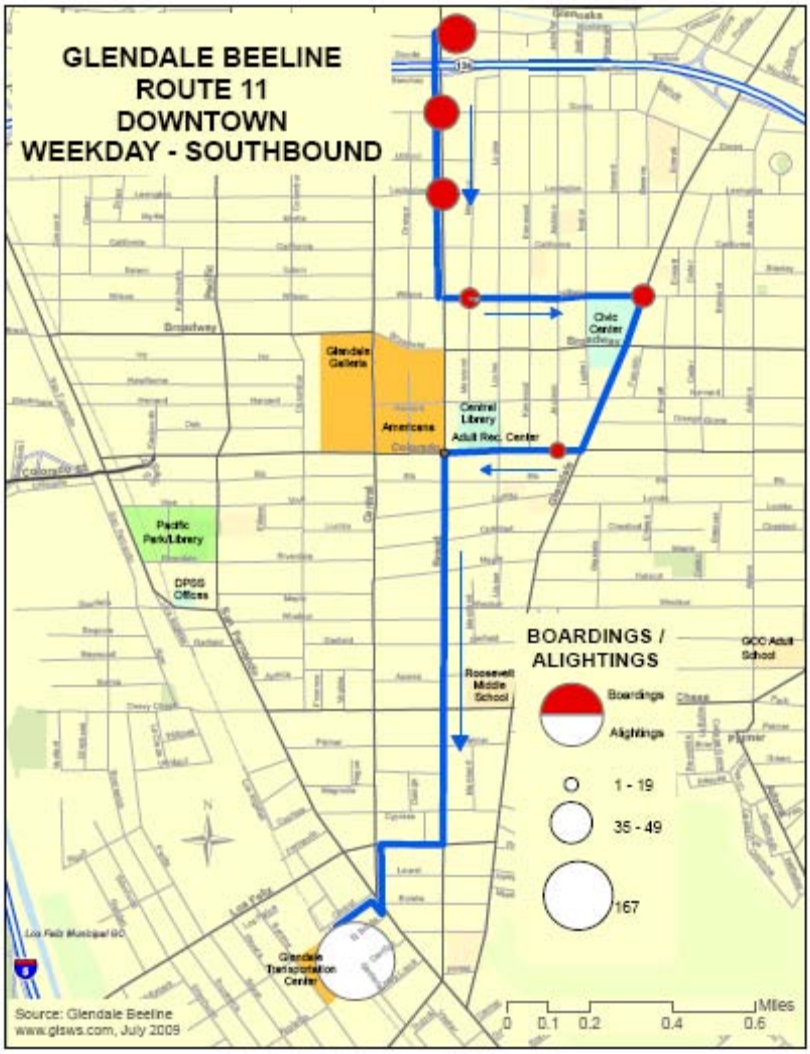
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	389	$209	$888	$2.28	$1.74	23.5%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figure 2.23 shows boardings by stop and direction for weekdays. The only stop with at least 100 boardings is northbound at the Glendale Transportation Center. Monterey & Brand, the first southbound stop has the most southbound boardings with 49.

Figure 2.23
Route 11 Weekday Boardings and Alightings by Stop





There are no trip segments with loads exceeding 125 percent of capacity on Route 11. Buses on Route 11 seat 45 passengers, so loads of 57 and over exceed 125 percent of capacity.

Weekday Segment and Time of Day Analysis

Segment and time of day analysis is not useful for the analysis of express routes, because the overwhelming majority of afternoon boardings take place in downtown and most segments have only one or two stops. As shown in Figure 2.23, the segment between GTC and Brand & Colorado has nearly all the northbound boardings, while the first segment southbound has the majority of southbound boardings.

Peak Load and Maximum Load

Table 2.74 shows the peak load points in either direction on Route 11 on weekdays. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.74 indicates that the peak load point for weekday travel is northbound at GTC with 218 passengers traveling north at this location. The maximum load point is northbound on the weekday 6:49 a.m. and 7:31 a.m. trips at GTC, with 42 riders on board.

Table 2.74
Route 11 Peak and Maximum Load Points

Measure	Northbound			Southbound		
	Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	GTC	Morning	218	Colorado & Brand	Afternoon	167
Maximum Load Point	GTC	6:49 a.m. and 7:31 a.m.	42	Colorado & Jackson	4:32 p.m.	40

Source: Ridecheck data, November 2008

Schedule Adherence

Table 2.75 presents schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 11 on weekdays. Schedule adherence for Route 11 is 91 percent, 3rd among the ten weekday routes. No late departures were recorded during the ridecheck on Route 11. All early departures northbound occurred at stops with no boardings during the entire morning period.

Traffic congestion is one cause of schedule adherence problems. No segment of Route 11 operates on streets with LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on Brand Boulevard between S.R. 134 and Lexington.

Table 2.75
Route 11 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	41	45	86	41	--	--	45
Early	4	5	9	4	--	--	5
Late	0	0	0	0	--	--	0
On Time %	91%	90%	91%	91%	--	--	90%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.76 and 2.77 show average eastbound and westbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running times are adequate overall in both directions. In Chapter 8, we propose separate running times for individual trips, reflecting specific traffic conditions and bus loadings in the morning and afternoon peak periods.

Table 2.76
Route 11 Average versus Scheduled Northbound Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning	
	Act	Schd
GTC - Brand & Colorado	7	7
Brand & Colorado – Monterey & Brand	5	5
Monterey & Brand – Wilson & Glendale	6	6
Wilson & Glendale – Colorado & Jackson	3	2
Total Running Time	21	20

Source: Ridecheck data, November 2008

Table 2.77
Route 11 Average versus Scheduled Southbound Running Times (in Minutes) by Segment and Time of Day on Weekdays

Segment	Afternoon	
	Act	Schd
Monterey & Brand – Wilson & Maryland	8	8
Wilson & Maryland – Wilson & Glendale	2	2
Wilson & Glendale – Colorado & Jackson	3	2
Colorado & Jackson – GTC	10	11
Total Running Time	22	23

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Ridership on Route 11 is slightly under 400 riders per day and is the higher of the two express routes. Productivity is 33.4 boardings per revenue hour, higher than some local routes. There are no overcrowded trips on Route 11.

Schedule adherence is very good at 91 percent, with no late departures. Several early departures occurred in the morning at stops where no one is boarding.

Route 11 provides express service between the GTC and downtown Glendale. The service is well utilized and reasonably productive. A few trips at the shoulders of the peak periods do not carry many passengers and deserve closer consideration.

Route 12 Metrolink Express: Glendale – Burbank

Overview

Route 12 is one of the two express routes in the Beeline network. Route 12 is scheduled to meet Metrolink trains at the Glendale Transportation Center (GTC) and the Burbank Regional Intermodal Transportation Center (RITC), and operates between the GTC and the RITC via San Fernando Boulevard and Flower Street (see Figure 2.24). Route 12 operates during the peak morning and afternoon periods.

The primary function of Route 12 is to serve employment sites along the San Fernando/Flower corridor extending through Glendale and Burbank, connecting employees with Metrolink trains in the morning and afternoon peak periods at both stations. Timing this route to meet trains at both stations is a challenge. Operating from only one station would be easier, but would not serve customers well for two reasons. The first is that it would lengthen travel times. Also, the stations are in two different fare zones, and some employees would pay a higher Metrolink fare.

Ridership on Route 12 is lower than on the other express route, Route 11. Productivity is lower on this route than all but one other Beeline route. The need to operate two-way service results in lower productivity.

Headway and Span of Service

Table 2.78 shows Route 12 headways by time of day and day of the week. Headways are less meaningful for Routes 11 and 12, since departure times are scheduled to match Metrolink timetables. Table 2.78 also indicates the span of service, calculated from the start time of the first trip in the morning to the start time of the last trip in the evening. The express lines operate on weekdays only.

Table 2.78
Route 12 Headway and Span of Service – Weekday Only

Day of Week	Time of Day	Headway (minutes)	Span of Service
Weekday	Morning	7-46	6:03 – 9:41 a.m.
	Afternoon	5-53	2:42 – 6:10 p.m.

Operating Data

Table 2.79 presents operating data for Route 12. Among the ten weekday routes, Route 12 ranks 9th in boardings and 9th in boardings per revenue hour. As noted earlier, revenue hours in Table 2.79 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours.

Average trip length is 2.1 miles, 4th among the ten weekday routes.

Table 2.79
Route 12 Operating and Productivity Data – Weekday Only

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	368	23.2	15.9	2.14

Source: Ridecheck Data, November 2008

Figure 2.24
Route 12

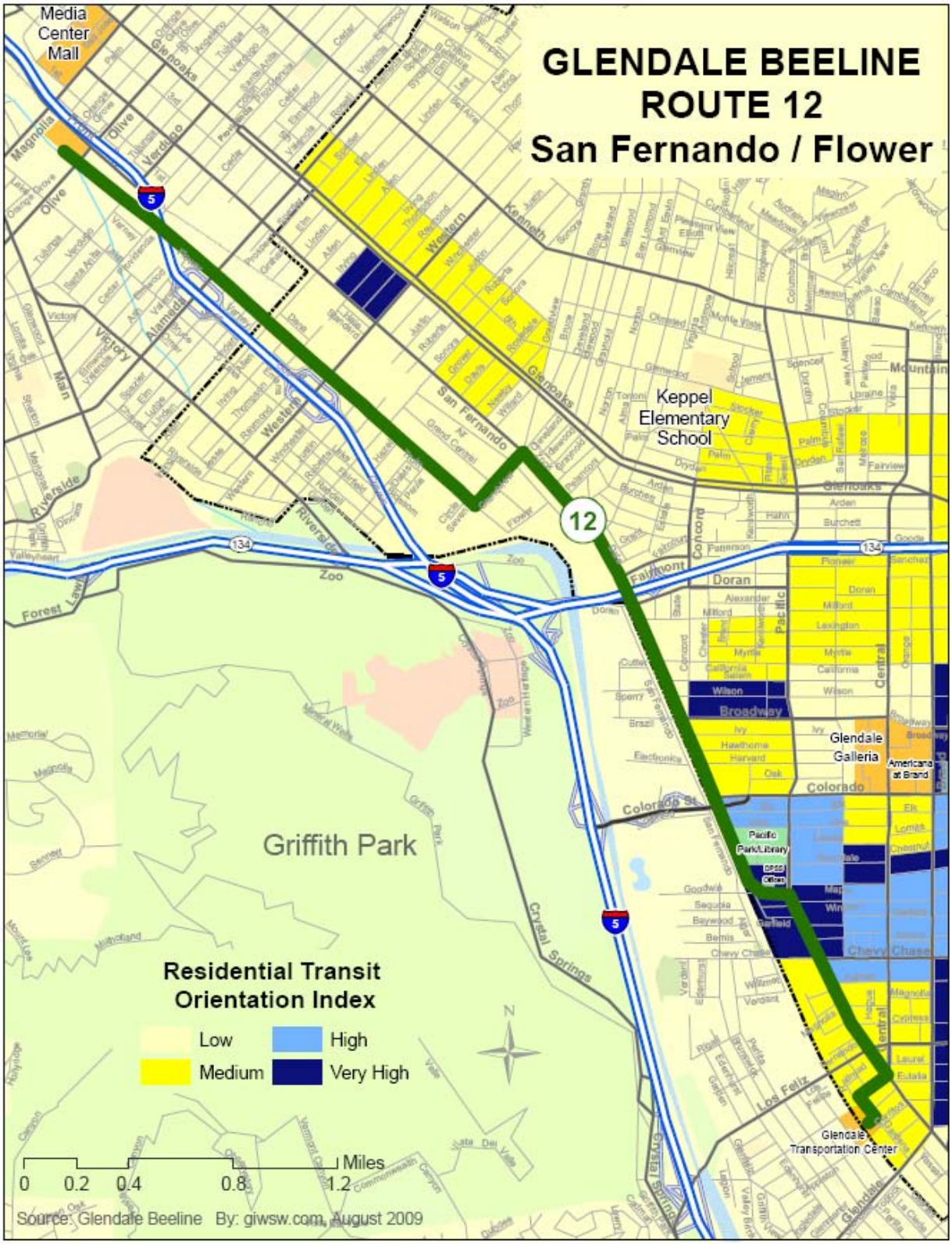


Table 2.80 presents financial data for Route 12. Route 12 is 9th among the ten weekday routes in subsidy per passenger and 3rd among the ten weekday routes in farebox recovery ratio (passenger revenue divided by operating cost). Higher fares contribute to the strong farebox recovery ratio.

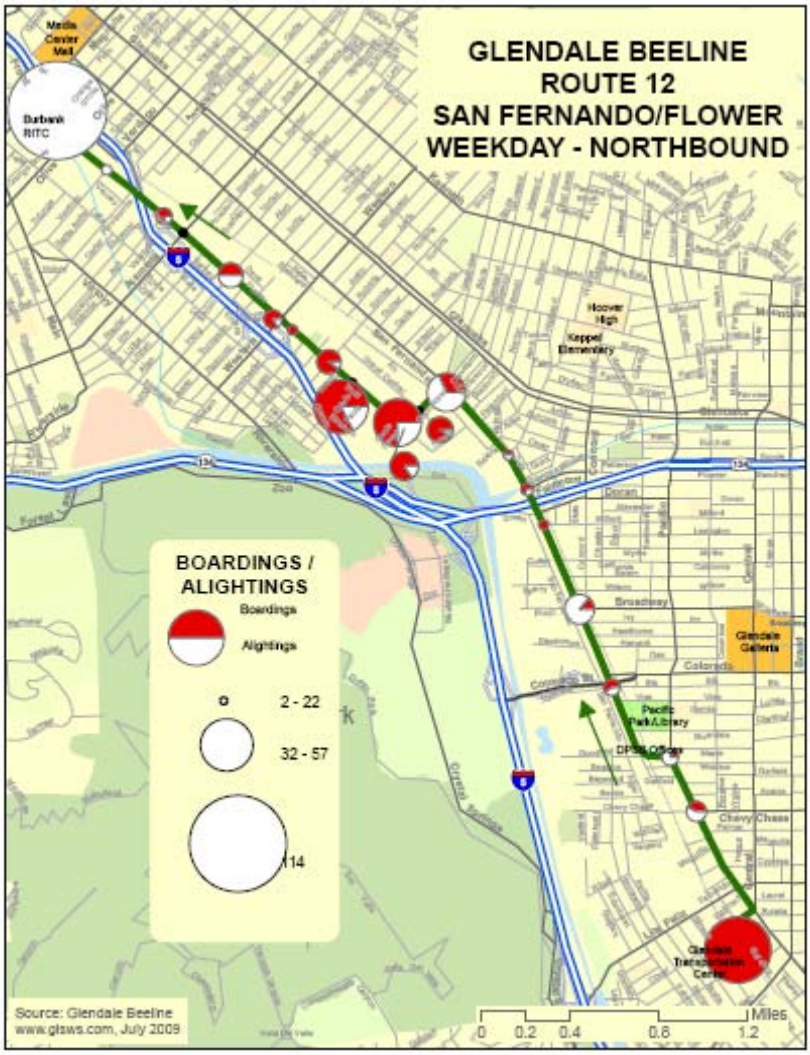
Table 2.80
Route 12 Financial Data – Weekday Only

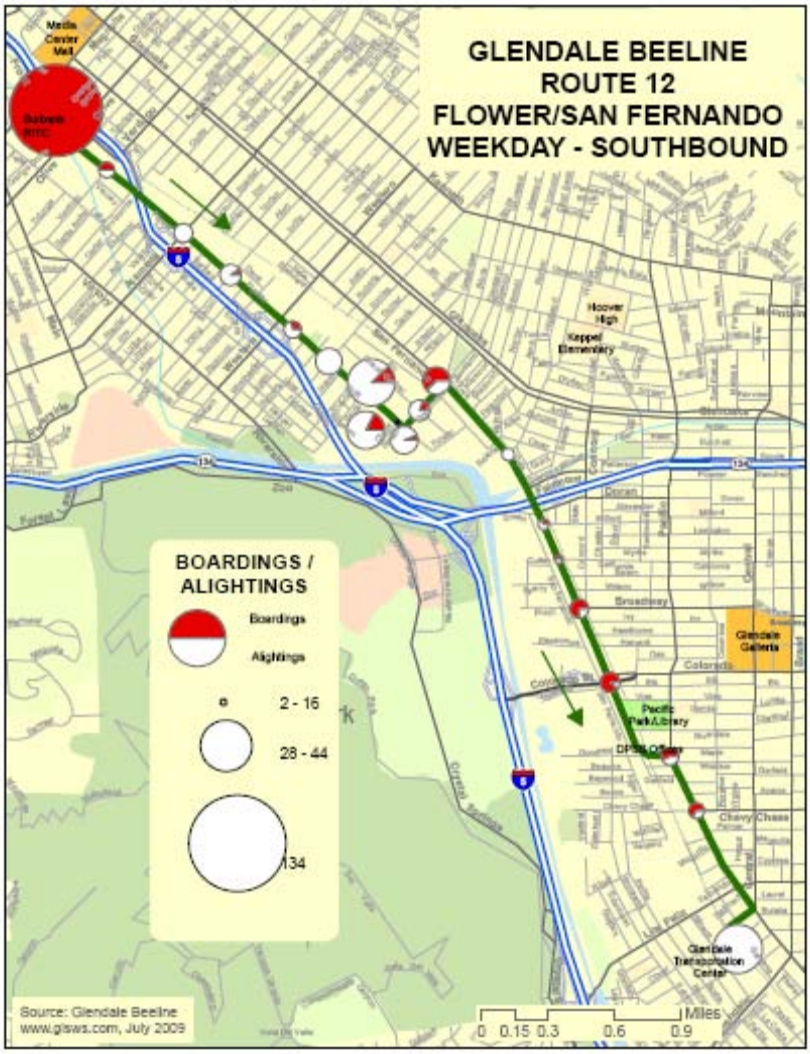
Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	368	$198	$1,769	$4.81	$4.27	11.2%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figure 2.25 shows boardings by stop and direction for weekdays. The only stop with at least 100 boardings is southbound at the Burbank RITC (134). GTC, the first northbound stop has the most northbound boardings with 57.

Figure 2.25
Route 12 Weekday Boardings and Alightings by Stop





No trip on Route 12 carried loads exceeding 125 percent of capacity. Buses on Route 12 seat 28 passengers on average, so loads of 35 and over exceed 125 percent of capacity.

Weekday Segment and Time of Day Analysis

Segment and time of day analysis is not useful for the analysis of express routes, because most segments have only one or two stops. As shown in Figure 2.25, the segment between the Burbank RITC and Flower & Alameda accounts for the majority of southbound boardings, while GTC has the majority of northbound boardings in the morning peak.

Peak Load and Maximum Load

Table 2.81 shows the peak load points in either direction on Route 12 on weekdays. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.81 indicates that the peak load point is southbound at the Burbank RITC with 134 passengers traveling south at this location. The maximum load points are northbound at Flower & Ash on the 5:17 p.m. trip and southbound at the Burbank RITC on the 7:59 a.m. trip, with 26 riders on board.

Table 2.81
Route 12 Peak and Maximum Load Points

Measure	Northbound			Southbound		
	Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Flower & Ash	All day	116	RITC	All day	134
Maximum Load Point	Flower & Ash	5:17 p.m.	26	RITC	7:59 a.m.	26

Source: Ridecheck data, November 2008

Schedule Adherence

Table 2.82 presents schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 12 on weekdays. Schedule adherence for Route 12 is 84 percent, 5th among the ten weekday routes. Early departures are more common than late departures, and may reflect Metrolink train arrivals. Afternoon schedule adherence is 96 percent in both directions combined.

Traffic congestion is one cause of schedule adherence problems. One long segment along San Fernando Road (between Grandview and Broadway) has LOS F during the afternoon peak hour. LOS E is reported during the afternoon peak hour on San Fernando Road between Broadway and Riverdale and between Pacific and Chevy Chase.

Table 2.82
Route 12 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Afternoon	
	NB	SB	Total	NB	SB	NB	SB
On Time	138	139	277	52	64	86	75
Early	20	22	42	18	19	2	3
Late	8	4	12	8	2	0	2
On Time %	83%	84%	84%	67%	75%	98%	94%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.83 and 2.84 show average eastbound and westbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running times appear to be too generous in both directions in the morning, which could account for early departures. In Chapter 8, we propose separate running times for individual trips, reflecting specific traffic conditions and bus loadings in the morning and afternoon peak periods.

Table 2.83
Route 12 Average versus Scheduled Northbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Afternoon	
	Act	Schd	Act	Schd
GTC – San Fernando & Chevy Chase	4	3	5	3
San Fernando & Chevy Chase – San Fernando & Broadway	4	5	3	4
San Fernando & Broadway – Grandview & Air Way	5	6	5	5
Grandview & Air Way – Flower & Circle Seven	2	2	2	2
Flower & Circle Seven – Flower & Sonora	1	2	2	2
Flower & Sonora – Flower & Alameda	3	3	3	3
Flower & Alameda – Burbank RITC	2	3	3	3
Total Running Time	21	24	23	23

Source: Ridecheck data, November 2008

Table 2.84
Route 12 Average versus Scheduled Southbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Afternoon	
	Act	Schd	Act	Schd
Burbank RITC – Flower & Alameda	2	3	3	3
Flower & Alameda – Flower & Sonora	3	2	3	2
Flower & Sonora – Flower & Circle Seven	2	2	2	2
Flower & Circle Seven – Grandview & Air Way	3	4	3	4
Grandview & Air Way – San Fernando & Broadway	4	6	5	5
San Fernando & Broadway – San Fernando & Chevy Chase	4	5	4	4
San Fernando & Chevy Chase – GTC	2	3	3	3
Total Running Time	21	25	23	23

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Ridership on Route 12 is over 350 riders per day and is the lower of the two express routes. Productivity is 15.9 boardings per revenue hour, lower than all but one other Beeline route. There were no overcrowded trips on Route 12.

Schedule adherence is 84 percent. Early departures are more common than late departures and are a particular problem in the morning. The morning schedule may need to be adjusted.

Route 12 provides express service between the GTC and downtown Burbank. Two-way service during both peak periods results in lower productivity than Route 11, the other express route. A few trips at the shoulders of the peak periods do not carry many passengers and deserve closer consideration. Timing of trips may no longer match up well with changed Metrolink schedules. Also to be considered (in Chapter 8) is the possibility of operating the route from only one of the Metrolink Stations in the peak direction only.

Route 13 Downtown to Glenoaks Canyon

Overview

Route 13 is the most recent addition to the Beeline network, with five roundtrips per weekday between Harvard & Louise in downtown Glendale and Arcade & Glenoaks in Glenoaks Canyon. Primary streets of operation include Broadway, Glendale Avenue, California Avenue, Chevy Chase Drive, and Glenoaks Boulevard (See Figure 2.26).

The function of this route is to provide service to the Glenoaks Canyon area of Glendale. The route is not well utilized: ridership on Route 13 is lower than on any other Beeline route. Productivity is also the lowest of any Beeline route.

Headway and Span of Service

Table 2.85 shows Route 13 trip times. Span of service is from 7:15 a.m. to 5:30 p.m. Route 13 operates on weekdays only.

Table 2.85
Route 13 Trip Times – Weekday Only

Day of Week	Trip Times EB	Trip Times WB
Weekday	7:15 a.m. 8:45 a.m. 12:15 p.m. 3:30 p.m. 5:10 p.m.	7:35 a.m. 9:05 a.m. 12:35 p.m. 3:50 p.m. 5:30 p.m.

Operating Data

Table 2.86 presents operating data for Route 13. Among the ten weekday routes, Route 13 ranks last in boardings and in boardings per revenue hour. As noted earlier, revenue hours in Table 2.87 are the actual revenue hours operated on the day of the ridecheck, which may not match the scheduled revenue hours. Average trip length is 1.51 miles, 5th among the ten weekday routes.

Table 2.86
Route 13 Operating and Productivity Data – Weekday Only

Day of Week	Boardings	Revenue Hours	Boardings per Rev Hr	Average Trip Length
Weekday	41	3.1	13.4	1.51

Source: Ridecheck Data, November 2008

Table 2.87 presents financial data for Route 13. Route 13 is last among the ten weekday routes in both subsidy per passenger and farebox recovery ratio (passenger revenue divided by operating cost).

Table 2.87
Route 13 Financial Data – Weekday Only

Day of Week	Boardings	Passenger Revenue	Operating Cost	Cost per Boarding	Subsidy per Boarding	Farebox Recovery Ratio
Weekday	41	$7	$233	$5.68	$5.50	3.2%

Source: Ridecheck data, November 2008; Beeline cost per revenue hour for FY 2009; Beeline average revenue per passenger for FY 2008

Figure 2.26
Route 13

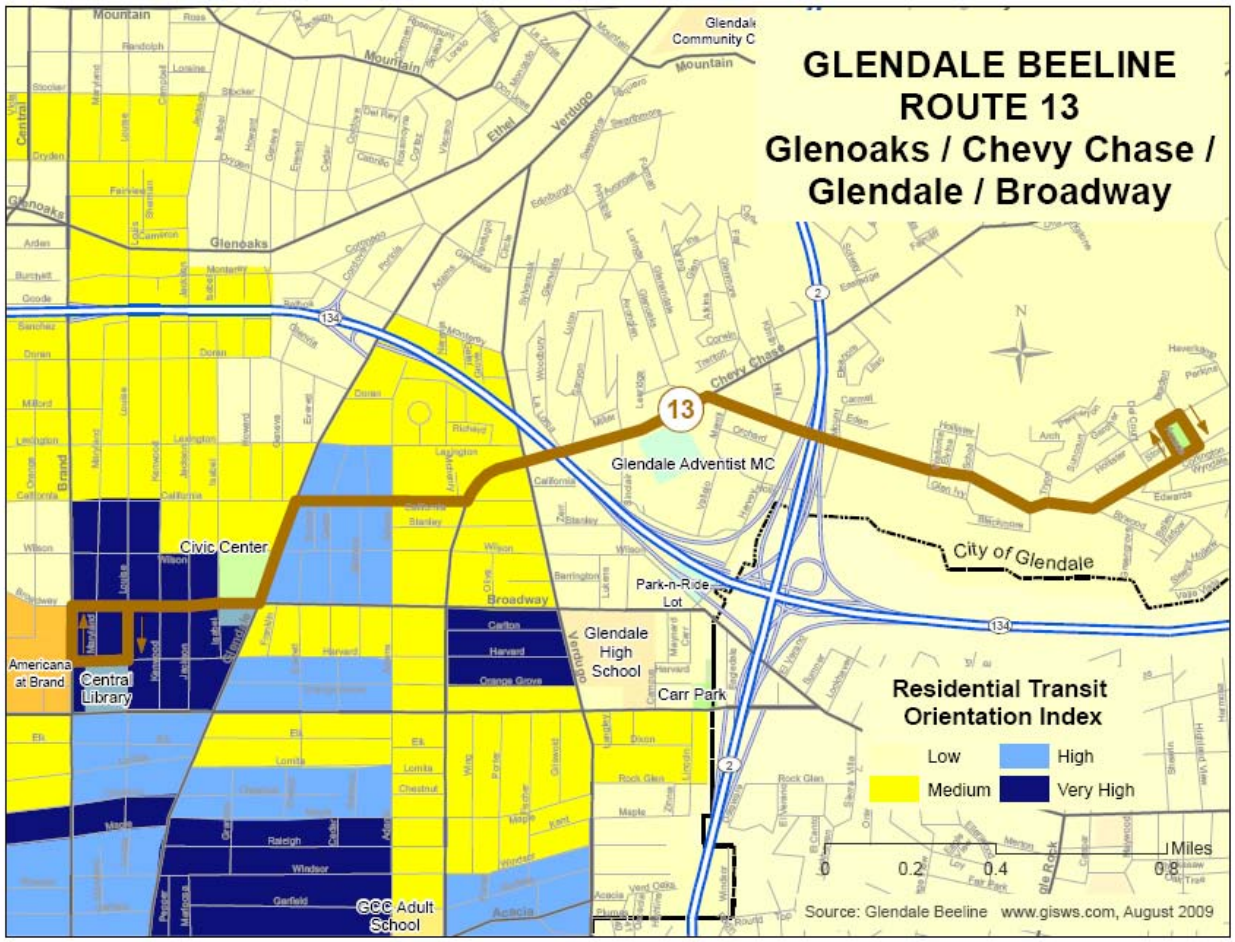
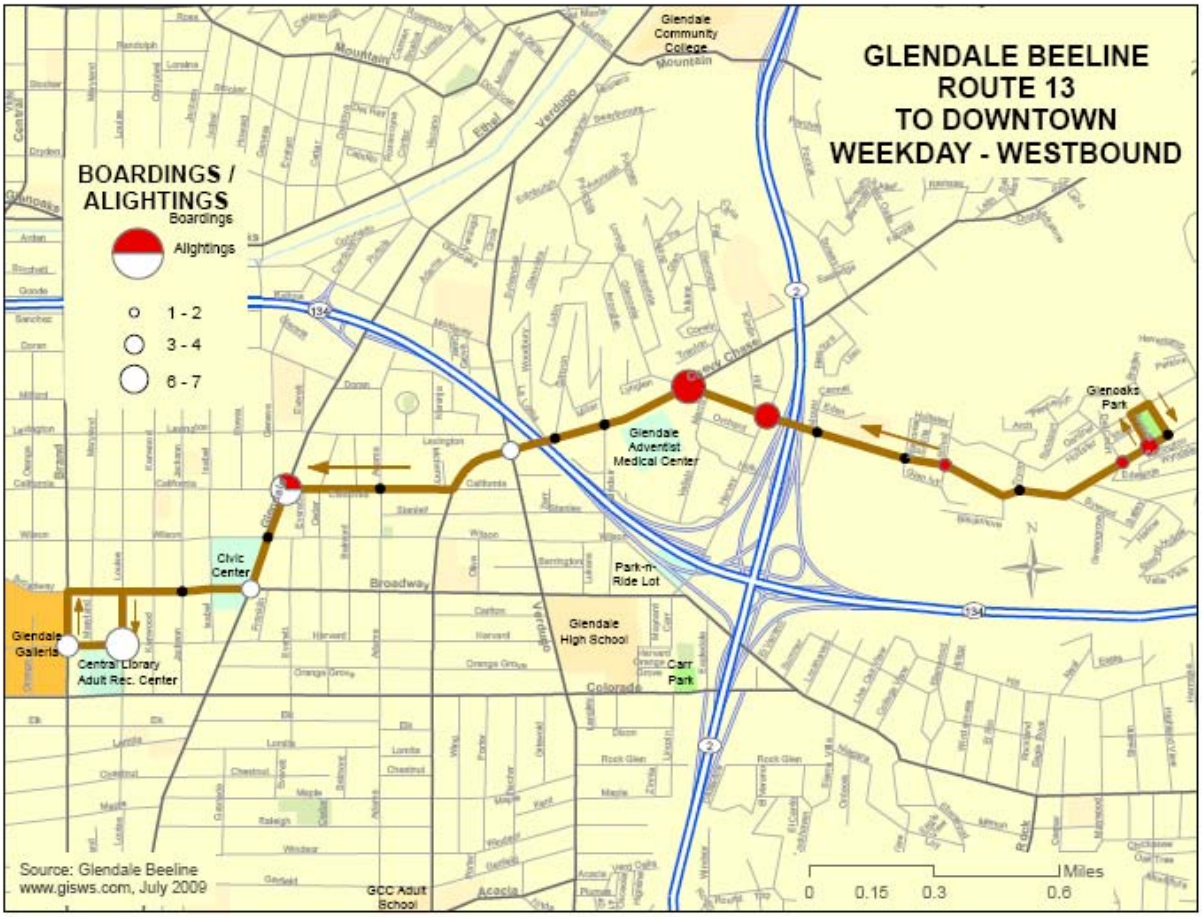


Figure 2.27 shows boardings by stop and direction for weekdays. The busiest stop is Broadway & Brand eastbound, with nine boardings all day. Chevy Chase & Glenoaks has the most westbound boardings with seven.

Figure 2.27
Route 13 Weekday Boardings and Alightings by Stop



No trip on Route 13 carried loads exceeding 125 percent of capacity.

Weekday Segment and Time of Day Analysis

Tables 2.88 and 2.89 show weekday boardings and productivity (boardings per revenue hour) by direction, time of day, and route segment. Morning is defined as start of service to 8:59 AM. Midday is 9:00 AM to 2:59 PM. Afternoon is 3:00 PM to end of service. Each route segment includes boardings at the first stop but not at the last stop of the segment; for example, eastbound boardings at Glendale & California are counted in the second segment. Ridership demand is predominantly eastbound at all times except midday. Eastbound boardings are highest in the segment between Harvard & Louise and Glendale & California, while westbound boardings are highest in the segment between Arcade & Glenoaks and Chevy Chase & Glendale Adventist.

Table 2.88
Route 13 Weekday Boardings by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Harvard & Louise – Glendale & California	18	2	8	1	3	1	7	0
Glendale & California – Chevy Chase & Glendale Adventist	4	0	2	0	0	0	2	0
Chevy Chase & Glendale Adventist – Arcade & Glenoaks	2	15	1	4	0	4	1	7
Weekday Total	**24**	**17**	**11**	**5**	**3**	**5**	**10**	**7**

Source: Ridecheck data, November 2008

Table 2.89 presents productivity, in terms of boardings per revenue hour, for Route 13 by time of day and route segment. Productivity is higher in the westbound direction early in the day and in the eastbound direction later in the day. The most productive route/time of day segment is westbound between Arcade & Glenoaks and Chevy Chase & Glendale Adventist in the morning peak (48.0 boardings per revenue hour). The most productive eastbound segment is between Harvard & Louise and Glendale & California, with 25.3 boardings per revenue hour in the morning peak.

Table 2.89
Route 13 Weekday Boardings per Revenue Hour by Direction, Time of Day, and Route Segment

Segment	All Day		Morning		Midday		Afternoon	
	EB	WB	EB	WB	EB	WB	EB	WB
Harvard & Louise – Glendale & California	21.2	5.0	25.3	15.0	18.0	5.5	19.1	0.0
Glendale & California – Chevy Chase & Glendale Adventist	11.4	0.0	15.0	0.0	0.0	0.0	15.0	0.0
Chevy Chase & Glendale Adventist – Arcade & Glenoaks	3.9	27.3	4.3	48.0	0.0	17.1	5.5	30.0
Weekday Total	**13.7**	**13.1**	**15.7**	**21.4**	**8.6**	**8.8**	**14.3**	**14.0**

Source: Ridecheck data, November 2008

Peak Load and Maximum Load

Table 2.90 shows the peak load points in either direction on Route 13 on weekdays. For peak load point, we use total daily ridership to identify the stop at which the total number of passengers on board is greatest. For maximum load point, we use ridership by trip to identify the trip and stop with the most people on a single bus. Table 2.90 indicates that the peak load point is northbound at Glendale & California with 17 passengers traveling north at this location. The maximum load point is southbound at Chevy Chase & Glenoaks on the 3:50 p.m. trip, with six riders on board.

Table 2.90
Route 13 Peak and Maximum Load Points

Measure	Eastbound			Westbound		
	Stop	Time	Riders on Board	Stop	Time	Riders on Board
Peak Load Point	Glendale & California	All day	17	Chevy Chase & Glenoaks	All day	16
Maximum Load Point	Broadway & Louise; Chevy Chase & Verdugo; Glendale & California	7:15 a.m. 8:45 a.m. 3:30 p.m.	5	Chevy Chase & Glenoaks	3:50 p.m.	6

Source: Ridecheck data, November 2008

Schedule Adherence

Table 2.91 presents schedule adherence data, in terms of the percent of all timepoints at which the bus was within 1 minute before to five minutes after the scheduled time, for Route 13 on weekdays. Schedule adherence for Route 13 is 100 percent, 1st among the ten weekday routes.

Table 2.91
Route 13 Weekday Schedule Adherence

Actual vs. Schedule	All Day			Morning		Midday		Afternoon	
	EB	WB	Total	EB	WB	EB	WB	EB	WB
On Time	20	20	40	8	4	4	8	8	8
Early	0	0	0	0	0	0	0	0	0
Late	0	0	0	0	0	0	0	0	0
On Time %	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Ridecheck Data, November 2008

Another way of considering schedule adherence is to examine actual versus scheduled running times. Tables 2.92 and 2.93 show average eastbound and westbound running times and scheduled running times by segment and time of day on weekdays. Caution is needed in interpreting results, since delays on one or two trips can affect the average for the entire segment or time period, but this level of detail highlights where running time adjustments might be needed. Running times appear to be adequate in both directions.

Table 2.92
Route 13 Average versus Scheduled Eastbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Harvard & Louise – Glendale & California	8	7	8	7	9	7
Glendale & California – Chevy Chase & Glendale Adventist	4	4	3	4	4	4
Chevy Chase & Glendale Adventist – Arcade & Glenoaks	6	5	5	5	5	5
Total Running Time	17	16	16	16	17	16

Source: Ridecheck data, November 2008

Table 2.93
Route 13 Average versus Scheduled Westbound Running Times
(in Minutes) by Segment and Time of Day on Weekdays

Segment	Morning		Midday		Afternoon	
	Act	Schd	Act	Schd	Act	Schd
Arcade & Glenoaks – Chevy Chase & Glendale Adventist	5	7	7	7	7	7
Chevy Chase & Glendale Adventist – Glendale & California	4	4	4	4	4	4
Glendale & California – Harvard & Louise	4	5	6	5	5	5
Total Running Time	13	16	17	16	15	16

Source: Ridecheck data, November 2008

Appendix A contains additional information on schedule adherence, including graphs of actual versus scheduled running time for every trip.

Overall Assessment

Ridership on Route 13 is very low, even given the fact that there are only five trips per day. Productivity is also very low. On the bright side, schedule adherence is 100 percent, the best in the Beeline system.

Route 13 provides service to the Glenoaks Canyon area of Glendale. The continued viability of this route is analyzed in Chapter 8 of this study.

Glendale Beeline
2009 Line-by-Line Analysis
Chapter 3: Passenger Miles by Line

3.0 Introduction

Glendale Beeline is required to report passenger miles traveled on its bus system as part of the annual National Transit Database report for the Federal Transit Administration. Generally, the collection of the required data involves counting passenger boardings and alightings on a sample of trips. However, the 100 percent ridership count conducted as part of this Line-by-Line Analysis provides complete data regarding passenger miles and average trip lengths by route and day type.

This chapter reports passenger miles traveled on Glendale Beeline, based on the findings of the 100 percent ridecheck conducted in November 2008. Passenger miles are reported by line and day type. An annual number is calculated based on 255 weekdays, 52 Saturdays, and 52 Sundays and holidays in a typical year. Factors taking into account seasonal variation and weekday ridership by day of the week are also used to calculate annual passenger miles. Average trip length for each route and day type is also presented here.

3.1 Passenger Miles by Line and Day

Table 3-1 summarizes passenger miles by line. Route 3 and Route 7, the longest routes in the Beeline system, are the top two routes in terms of passenger miles. Route 4 has higher ridership but shorter average trip lengths than Route 7.

Table 3.1
Beeline Passenger Miles by Line and Day, 2009

Route	Weekday	Saturday	Sunday	Annual 2009
1	1,259	492	378	337,443
2	1,510	603	439	404,525
3	11,334	1,542	--	2,724,716
4	3,746	1,160	985	981,982
5	1,642	295	--	398,368
6	1,452	548	--	366,390
7	5,667	711	--	1,359,331
11	1,019	--	--	238,053
12	787	--	--	183,980
13	62	--	--	14,509
Total	**28,478**	**5,351**	**1,802**	7,009,298

3.2 Average Trip Length by Line and Day

Table 3-2 shows average trip lengths by route and day type for all Glendale Beeline routes. The express routes inflate the average trip length slightly on weekdays. Trip lengths are longer on weekdays than on Saturday and (for all routes except Route 4) on Sunday.

Route 6 has the shortest average trip length and is the second-shortest route. Route 7 has the longest average trip length among all routes, and is the second-longest route (after Route 3) in the Beeline system. Route 3 ridership is concentrated on the Glendale – GCC segment, reducing the average trip length on this route.

Table 3.2
Beeline Average Trip Length (in Miles) by Line and Day, 2009

Line	Weekday	Saturday	Sunday	All Days
1	1.26	1.12	1.24	1.25
2	1.36	1.24	1.26	1.35
3	2.88	2.38	--	2.87
4	1.46	1.38	1.52	1.46
5	1.49	1.31	--	1.48
6	1.37	1.22	--	1.36
7	3.47	2.93	--	3.46
11	2.62	--	--	2.62
12	2.14	--	--	2.14
13	1.51	--	--	1.51
Total	2.16	1.61	1.39	2.12
Local Only	2.15	1.61	1.39	2.10

Glendale Beeline
2009 Line-by-Line Analysis
Chapter 4: Fare Analysis

4.0 Introduction

This fare analysis is being undertaken as part of the broader Line-by-Line analysis of the Beeline. The purpose of the fare portion of this study is to identify near-term strategies to maximize ridership and farebox revenues. While not intended as a comprehensive analysis of all fare policy elements, this analysis addresses important near-term alternatives.

Beeline fares are a good bargain. In fact, today's fares are unchanged from September 1993. Farebox revenues account for only 6.4 percent of Beeline operating costs. The California standard for farebox recovery is 20 percent.

It is appropriate to examine fares now, when the Glendale Beeline faces continual challenges to accommodate demand for transit service within the constraints of available budget. Fare policy is a critical element in addressing these challenges, because fare policy affects both the demand and budget sides of the issue. Fare policy is also extremely sensitive because of its high visibility to the City Council, riders, and the broader community. Thus, another outcome of this study is to craft a fare philosophy and resultant strategies that can assist all stakeholders in considering fare issues now and in the future. Section 4.2 presents proposed fare philosophy, goals, and strategies.

As part of the Line-by-Line analysis, trained surveyors recorded the fare media used on each trip (weekday and weekend) of the Beeline system. Section 2 presents the results of the analysis of fare payment by day, by route, and overall.

Every transit system is unique in certain respects, but it is often useful to know how similar systems have approached fare issues. Section 4.3 reports on fare levels at municipal systems and other transit agencies within the greater Los Angeles area. These findings establish a context in which to analyze alternatives for the Glendale Beeline.

Section 4.4 identifies fare policy alternatives and presents a qualitative evaluation of each alternative in terms of its ability to achieve the City's transit-related goals. This section also analyzes promising fare policy alternatives in greater detail, including quantification of ridership and revenue impacts through use of fare elasticities. Finally, Section 4.5 presents the recommended fare strategy.

Fare policy is a complex topic that has repercussions affecting service provision, operating procedures, and perceptions of the transit agency by users and non-users. This study's findings establish both a fare philosophy to guide decisions and also strategies for considering appropriate fare levels.

Prior to analyzing fare options, it is useful to understand the current Beeline fare structure. Table 4.1 describes current fare policy.

Table 4.1
Current Glendale Beeline Fare Rates

Type of Fare	Category	Price
Cash fares Routes 1-7	Regular cash fare	$0.25
	Senior/disabled cash fare	$0.15
	Children under 5	Free
	ASI Cardholders	Free
Cash fares Routes 11-12 only	Express cash fare	$1.00
	Metrolink pass/ticket	Free
Beeline passes	Regular 31-day pass	$12.00
	Senior/disabled 31-day pass	$4.50
	Regular 10-ride card	$2.00
Cash transfers	Transfers Beeline to Beeline	None
	Regular interagency transfers	$0.50
	Senior/disabled interagency transfers	$0.25
Other media accepted on Routes 1-7	Accept Metro passes (TAP)/ tokens	Yes
	Accept interagency transfers	Yes
	Accept EZ transit pass	Yes
	Accept Metrolink passes/tickets	Yes

Source: Glendale Beeline

4.1 Current Fare Payment Methods

As part of this Line-by-Line analysis, trained surveyors rode every trip in the Beeline system to record boardings, alightings, loads, times at timepoints, and fare payment methods. Results are presented in this section.

As shown in Table 4.2, cash is by far the most common method of fare payment on the Beeline system. The second most popular fare payment method is a Metro pass. Cash and Metro pass together account for over 75 percent of all boardings.

The only other fare payment methods that account for at least five percent of all boardings are the Beeline Metrocard, a 31-day pass good only on Beeline local buses, and Metrolink passes or tickets. Nearly all (85 percent) of boardings using Metrolink fare media occur on the express routes (Route 11 and Route 12) on weekdays. There are minor differences among local routes, but all local routes show a majority (between 60 and 80 percent) of cash boardings.

Table 4.2
Current Fare Payment Methods by Beeline Riders

Fare Payment Method	Weekday		Saturday		Sunday	
	Total	Percent	Total	Percent	Total	Percent
Cash	8,265	62.7%	2,168	65.0%	869	66.9%
Beeline 31-day Pass	716	5.4%	170	5.1%	100	7.7%
Beeline 10-ride	535	4.1%	51	1.5%	16	1.2%
EZ transit pass	103	0.8%	65	2.0%	19	1.5%
Metro Pass	2,054	15.6%	769	23.1%	270	20.8%
Metro Token	10	0.1%	13	0.4%	10	0.8%
Metro Transfer	190	1.4%	2	0.1%	--	--
Interagency transfer	63	0.5%	35	1.1%	15	1.2%
Metrolink ticket/pass	805	6.1%	24	0.7%	--	--
Access	144	1.1%	36	1.1%	--	--
Other free	302	2.3%	--	--	--	--
Total	13,187	100.0%	3,333	100.0%	1,298	100.0%

Source: 2008 Glendale Beeline On-board Survey

One interesting finding in Table 4.2 is that the Beeline Metrocard (31-day) and 10-ride passes are not used extensively by riders. The Metrocard has at least a five percent share on all days, but the 10-ride pass is only used by four percent of weekday riders and by less than two percent of Saturday and Sunday riders.

4.2 Fare Philosophy, Goals, and Strategies

The purpose of establishing fare philosophy, goals, and strategies for the Glendale Beeline is to develop fare adjustment policies and corresponding service pricing strategies that:

1. Ensure a "fair share" contribution by transit riders, (current farebox revenues cover only 6.4 percent of Beeline operating costs) sufficient to operate transit service and meet farebox requirements; and

2. Promote rider understanding and acceptance of the intrinsic value of transit services operated by Glendale Beeline and the importance of ongoing financial support for these services.

Philosophy

Public transportation is a subsidized enterprise funded through a variety of local, state and federal sources. Passengers contribute to the cost of operating the service through the payment of fares. The payment of fares by transit riders demonstrates that public transportation continues to be a valuable community service. The Glendale Beeline's goal is to offer pricing and fare media that ensures customer convenience and simplicity, promotes travel flexibility, improves mobility locally and within the region, and rewards regular use.

Fares are an important source of operating revenue. As a revenue source, fares are used to promote ridership and fulfill Beeline and community transportation objectives. Fare adjustments

will be needed periodically to ensure that the Glendale Beeline can maintain and enhance current service levels and that passengers pay a reasonable portion of the cost of operating services.

Goals and Objectives

The goals and objectives outlined below have been developed in conjunction with Glendale Beeline staff and can be used to develop fare adjustment strategies. The proposed goals and objectives are as follows:

Ridership

Actively promote the continued growth of transit ridership on Glendale Beeline transit services.

Equity

Develop equitable fare pricing strategies through the implementation of service marketing and fare promotions programs.

Revenue and Sustainability

1. Increase farebox revenue to offset cost of providing services;

2. Ensure a “fair share” contribution by transit riders that will assist in covering transit operating costs; and

3. Promote rider understanding and acceptance of the intrinsic value of transit services operated by the Glendale Beeline, and the importance of ongoing financial support for these services.

Simplicity

Formulate a simple, fare structure that allows ease of revenue collection and administration, and promotes convenience of fare payment.

Integration

Develop consistent fare policies and practices that are complementary to those of neighboring transit agencies, including integrated fare strategies that ensure seamless transferring between systems and modes.

Implementation

Develop a straightforward, defensible methodology and process for implementing fare adjustments, which can be routinely validated, updated and applied throughout the system.

All of these goals are important. Some goals will be more important than others depending upon Council objectives and the financial situation at the time.

When and How Should Fare Adjustments Occur?

This analysis proposes the following guidelines and steps for considering fare adjustments.

- Routine, incremental adjustments to the fare structure should be implemented, as opposed to infrequent large increases. As noted in the next section, however, the simplicity of paying the fare must also be considered (i.e., minimize the number of coins needed).

- Glendale Beeline staff should perform a fare adjustment evaluation annually or biannually, in conjunction with the budget process. Agency policy should not preclude making mid-year fare adjustments to offset an unexpected loss of revenue or increase in operating costs, but such adjustments should be the rare exception. Service enhancements and/or improvements may dictate the need for fare adjustments as needed to maintain an acceptable farebox recovery ratio.

- Where possible, fare adjustments should coincide with service improvements. Riders often do not understand that fares pay only a portion of operating costs, and tying fare increases with service improvements is a way to enhance the acceptability of higher fares.

Factors to Be Considered During the Fare Adjustment Evaluation Process

Glendale Beeline staff would consider all or some of the factors outlined below as a part of the fare adjustment evaluation process. These factors should be prioritized based upon agency objectives at any one particular time.

- Inflation rate (could at a minimum, serve as the catalyst for routine annual fare adjustments)

- Ridership and revenue trends

- The Beeline's financial condition (e.g., growth in operating costs)

- Service enhancements and/or improvements

- Value of service to the rider

- Established Council policies and directives

- Market conditions and opportunities

- Auto-related costs (gas, parking costs, etc.)

- Cost of fare collection

- Simplicity of changes (i.e., minimize the number of coins needed – round off to the nearest 25 cent increment wherever possible)

4.3 Peer Review

The project team conducted a peer review of other transit systems within the greater Los Angeles area as one element of this study. The following activities were undertaken as part of the peer review:

- Collection and comparison of other transit operators' cash fares and pass rates to ascertain the break-even point for monthly passes and discounts between fare categories and to provide a basis for comparison with Beeline cash and pass prices;

- Identification and documentation of special pass programs offered by transit operators.

Eleven transit systems were included in the peer review. These systems include the major municipal operators within the Los Angeles region.

1. Burbank Bus
2. Culver City Municipal Bus Lines
3. Foothill Transit
4. Gardena Municipal Bus Lines
5. Long Beach Transit
6. Los Angeles Department of Transportation - Transit Division
7. Montebello Bus Lines
8. Norwalk Transit
9. Pasadena ARTS
10. Santa Monica Big Blue Bus
11. Torrance Transit

Data sources used included each agency's website and the FY 2007 NTD Report. Some agency websites did not clearly state whether a particular fare option is offered.

Summary of Peer Review Findings

The peer review provided data and information from other transit systems specifically related to fare levels and to types of fare media offered.

Cash Fares for Local and Express Services

Peer system cash fares for local and express services are summarized in Table 4.3. Glendale Beeline has the lowest local cash fare of all peer systems, along with LADOT DASH, at $0.25. The local cash fares at Pasadena ARTS is closest to Glendale Beeline's, at $0.50. All other peer systems charge at least 75 cents, with Long Beach the highest at $1.10 (as of February 15, 2009). LADOT DASH is the only peer system that offers a lower local cash fare for senior citizens and persons with disabilities.

Glendale Beeline's express cash fare is the lowest among the peer agencies that operate express service. However, the Beeline express service is more limited in geographic area than other agencies' express routes. The Beeline express routes function primarily as a distributor and collector for Metrolink passengers in Glendale and Burbank. While the cash fare is $1.00, very few passengers pay this fare; over 90 percent board without charge by showing a Metrolink pass or ticket. Glendale Beeline is reimbursed by Metrolink for $0.50 fare for each Express rider boarding with a Metrolink pass or ticket.

Table 4.3
Local/Express Cash Fares: Glendale Beeline and Peer Systems

System	Local Cash Fares			Express Cash Fares
	Adult	Senior/ Disabled	% S/D Discount	
Glendale Beeline	$0.25	$0.15	40%	$1.00
Burbank	$1.00	--	--	--
Culver City	$0.75*	$0.35	53%	--
Foothill	$1.00	$0.50	50%	$2.50-4.40
Gardena	$0.75	$0.35	53%	--
Long Beach	$1.10	$0.50	55%	--
LADOT DASH	$0.25	$0.10	60%	--
Montebello	$1.10	$0.50	55%	$1.20
Norwalk	$0.75	$0.35	53%	--
Pasadena ARTS	$0.75	$0.35	53%	--
Santa Monica	$0.75	$0.25	67%	$1.75
Torrance	$1.00	$0.25	75%	$1.50-2.00

Source: Transit Agency Websites, July 2009
Culver City fare increase effective August 24, 2009: Adult $1.00

Transfers

Peer system charges for transfers are presented in Table 4.4. Glendale Beeline does not issue transfers to other Beeline routes. Interagency transfer charges refer to transfers between different systems. Glendale Beeline has one of the highest adult transfer charges, primarily because its base fare is so low. The senior/disabled transfer charge at the Beeline is comparable to other agencies.

Table 4.4
Transfer Charges: Glendale Beeline and Peer Systems

System	Internal Transfer Charges		Interagency Transfer Charges	
	Adult	Senior/ Disabled	Adult	Senior/ Disabled
Glendale Beeline	None	None	$0.50	$0.25
Burbank				
Culver City	Free*	Free*	$0.25*	$0.10*
Foothill	$0.50	$0.25	$0.50	$0.25
Gardena	$0.40	$0.40	$0.40	$0.40
Long Beach	None	None	$0.50	$0.50
LADOT	None	None	None	None
Montebello	None	None	$0.25	$0.10
Norwalk	$0.25	$0.25	$0.35	$0.35
Pasadena ARTS	Free	Free	$0.25	$0.10
Santa Monica	$0.50	$0.10	$0.50	$0.10
Torrance	$0.40	$0.40	$0.40	$0.40

Source: Transit Agency Websites
Culver City fare increase effective August 24, 2009: Internal $0.25/$0.10 and IAT $0.40/$0.20

Prepaid Media

An unlimited-use 31-day or monthly pass is the most common prepaid fare medium for local service. Table 4.5 indicates the price and pass multiplier (i.e., the ratio of the monthly pass price to the cash fare). Many municipal systems do not offer a monthly pass.

Glendale Beeline's monthly pass multiplier is in the middle among systems that offer a monthly pass for the general public and the lowest among systems that have a different price for senior/ disabled monthly passes. Glendale Beeline's multiplier is 48 trips for the general pass and 30 for the senior/disabled pass, while the averages for the other systems are 47.9 and 41.0, respectively. The Beeline is the only system in this peer group to offer both a 31-day pass and a multiple-ride card or ticket book. The Beeline is also the only system to offer a multiple-ride card at a discount.

Table 4.5
Prepaid Media for Local Service: Glendale Beeline and Peer Systems

System	"Monthly" Pass					Other
	Definition	General	Pass Multiplier	Senior/ Disabled	Pass Multiplier	
Glendale Beeline	31-day	$12.00	48.0	$4.50	30.0	10-ride card $2; 25% discount
Burbank						
Culver City		--	--	--	--	--
Foothill	31-day	$66.00	66.0	$20.00	40.0	--
Gardena		--	--	--	--	40 tokens $30; no discount
Long Beach*	Monthly	$60.00	54.5	$21.00	42.0	Day pass $3.50; 5-day pass $16
LADOT	Monthly	$9.00	36.0	--	--	60-ride card $15; no discount
Montebello		--	--	--	--	Day pass $3
Norwalk		--	--	--	--	--
Pasadena ARTS		--	--	--	--	40-ticket book $20 60 S/D/student ticket book $15; No discount
Santa Monica		--	--	--	--	Day pass $2.50
Torrance	Monthly	$35.00	35.0	--	--	--

Source: Transit System Websites
Long Beach Transit fares in effect at the time of this analysis (February 2009); current monthly pass changed to 30-day pass April 1, 2009

Special Programs

The peer review identified one type of fare media that Glendale Beeline does not offer. Three peer agencies sell day passes, which allow unlimited ridership on a single day. One agency (Long Beach Transit) has used the day pass to replace transfers within the system. Long Beach Transit also offers a five-day pass. A day pass would not make sense on a system like the Beeline, which has low fares and does not offer transfers to other Beeline buses.

Peer Review: Summary of Findings

Key findings identified as a result of the peer review are:

- Current Glendale Beeline cash fares are among the lowest for all peer systems for both local and express services. The Beeline express routes are shorter than most other system's express routes.

- Glendale Beeline does not issue transfers to other Beeline routes, like two other peer systems. The Beeline has one of the highest general transfer prices, primarily because its base fare is so low. The senior/disabled transfer price at the Beeline is comparable to other agencies.

- Glendale Beeline's pass multiplier is at the peer group average for adult passes and is the lowest in the peer group for senior/disabled passes.

- The Beeline is the only system among its peers to offer both a 31-day pass and a multiple-ride card.

4.4 Fare Policy Alternatives

This section identifies fare policy alternatives under consideration for Glendale Beeline. These include:

- Pricing adjustments
- Changes in accepting Metro passes
- Changes to fare media

Pricing Adjustments

Changes in the local cash fare are identified for consideration. The Beeline has one of the lowest local fares of all peer systems included in the previous section. An increase from 25 cents to 50 cents is considered, along with a more significant increase to 75 cents or to $1.00, with concomitant increases in senior/disabled cash prices and in pass prices. Table 4.6 shows the three alternatives.

Table 4.6
Fare Alternatives

Category	Current	Alternative 1	Alternative 2	Alternative 3
Regular cash fare	$0.25	$0.50	$0.75	$1.00
Senior/disabled cash fare	$0.15	$0.25	$0.35	$0.50
Regular 31-day pass	$12.00	$24.00	$36.00	$48.00
Senior/disabled 31-day pass	$4.50	$12.00	$18.00	$24.00
10-ride card	$2.00	$4.25	$6.50	$9.00
Interagency transfers	$0.50	$0.50	$0.50	$0.50
Senior/disabled interagency transfers	$0.25	$0.25	$0.25	$0.25
Express cash fare	$1.00	$2.00	$3.00	$4.00

Before discussing the alternatives, it is worthwhile to highlight several modifications to the existing fare structure reflected in each alternative:

- Local senior/disabled cash fares are set at 50 percent of local general cash fares, rounded down to the nearest five-cent increment;
- The general 31-day pass continues to be priced at the equivalent of 48 cash fares;
- The senior/disabled 31-day pass is priced at the equivalent of 48 cash fares, an increase from 30 cash fares currently and identical to the pricing of the general 31-day pass;
- The 10-ride card is priced at a discount of 10 to 15 percent, a lesser discount than the current 20 percent;
- The price of interagency transfers is unchanged in all alternatives;
- The express fare is set at four times the local fare, rounded up to the nearest 50 cents. As noted earlier, nearly all Route 11 and Route 12 riders board without charge by showing their Metrolink pass or ticket, so the express fare.

Alternative 1 features an increase in the local general cash fare from 25 cents to 50 cents. The local senior/disabled cash fare would increase from 15 cents to 25 cents. The 31-day passes, the 10-ride card, and the express fare would also increase in line with the fare structure outlined above.

Alternative 2 involves an increase to 75 cents for the local general cash fare and an increase to 35 cents for the local senior/disabled cash fare. The 31-day passes, the 10-ride card, and the express fare would also increase in line with the fare structure outlined above.

Alternative 3 institutes a considerable fare increase to $1.00 for the local general cash fare and an increase to 50 cents for the local senior/disabled cash fare. The 31-day passes, the 10-ride card, and the express fare would also increase in line with the fare structure outlined above.

Changes in Acceptance of Metro Passes

As noted earlier in Table 4.1, the Beeline accepts EZ transit pass, Metro passes (including TAP) and tokens, interagency transfers, and Metrolink passes and tickets. Glendale either has cooperative agreements (regarding interagency transfers) or has a fare reimbursement agreement for most of these fare media, but is not reimbursed for Metro pass/token use. When the Beeline took over the operation of the former Metro Route 177, part of the agreement was to accept Metro passes. The Metro 177 agreement expires April 7, 2010, so new terms regarding fare media should be renegotiated.

The proposed alternative is not to accept Metro passes, to require Metro pass holders to pay the cash fare or use the EZ transit pass or Beeline fare media on Beeline buses. Approximately 15 percent of weekday boardings are with a Metro pass, for which Beeline is not reimbursed. EZ transit pass would continue to be accepted under the current fare reimbursement agreement and would be the most logical fare medium for riders who use both Metro and the Beeline on a regular basis. In fact, the original concept of EZ transit pass was that it would be the pass of choice for riders who used more than one system.

Changes to Fare Media

The peer review noted that the Beeline is the only municipal transit agency that offers both a 31-day pass and a multi-trip card. Neither is used extensively, and it makes little sense for Glendale to continue to incur the cost of producing both fare media

The proposed alternative is to discontinue the 10-trip card. Despite the discount offered (10 rides for the price of eight), the card clearly has not caught on with Beeline customers.

Evaluation of Fare Alternatives

This section develops evaluation techniques and applies them to the five alternatives. The transportation literature has found a remarkable consistency in ridership response to fare increases: for each 10 percent increase in fares, ridership declines by three percent. In technical terms, the elasticity of transit ridership with respect to fares is –0.3.

This fare elasticity applies to fare increases within the typical range. Alternatives 2 and 3 involve a huge fare increase that would fall outside the typical range. The best way to analyze these alternatives would be to treat them as the second and third phases of a multi-year fare increase program, with Alternative 1 as the first phase. Thus, using the general cash fare as an example, cash fares would increase by 100 percent (from 25 cents to 50 cents) under Alternative 1, by an additional 50 percent (from 50 cents to 75 cents) under Alternative 2, and by an additional 33 percent (from 75 cents to $1.00) under Alternative 3.

The fare elasticity provides a useful means of estimating ridership and revenue changes resulting from fare changes. As an example of fare elasticity calculations, Table 4.7 shows what would happen to ridership and farebox revenue under Alternative 1. Changes in ridership are

calculated using the fare elasticity of –0.3, while changes in revenue are calculated using the forecast ridership and the average revenue per passenger in each fare category.

Table 4.7
Predicted Impacts of Fare Changes under Alternative 1

Element	Total	Cash	31-day Pass	10-ride Card	Other
Current Annual Ridership	2,821,310	1,773,940	153,970	109,337	784,064
% Change in Fare		+100% gen +67% S/D	+100%gen +167% S/D	+112.5%	--
% Change in Ridership	-21.3%	-29.1%	-30.0%	-33.8%	0.0%
Ridership, Year 1	2,221,292	1,257,014	102,451	72,436	784,064
Current Annual Farebox Revenue	$425,000	$362,214	$14,920	$11,802	$36,063
% Change in Farebox Revenue	35.5%	34.2%	70.2%	69.4%	0.0%
Farebox Revenue, Year 1	$575,930	$486,221	$25,395	$19,993	$44,321

Source: Glendale Beeline Ridecheck Data and FY 08 Ridership Data

One interesting aspect of Table 4.7 that is sometimes misunderstood by policymakers is that a 100 percent fare increase does not result in a 100 percent increase in revenue. The reason for this is the loss in ridership due to the fare increase, resulting in fewer riders paying the higher fare. Farebox revenue is estimated to increase by 35 percent.

Research into fare elasticity has examined the relative sensitivity to fare increases among disaggregate groups of riders, with some interesting findings. Overall, however, a fare elasticity of –0.3 continues to provide accurate assessments of the overall impacts of fare increases on transit ridership.

Changes in a single fare medium are more difficult to analyze using fare elasticities, because riders can shift among fare payment types. For example, the projected impact of a 25 percent overall increase in fares is a 7.5 percent loss in ridership (25% fare increase * -0.3 elasticity). However, in the case of discontinuing the 10-ride card (which increases the cost of a single trip from 20 cents to 25 cents), some proportion of the lost ridership would find it more advantageous to purchase a monthly pass. Similarly, if Metro passes are no longer accepted, some portion of the ridership currently paying with a Metro pass would shift to either an EZ transit pass or cash.

Table 4.8 presents an example of the impact of discontinuing the 10-ride card and no longer accepting Metro passes. This example assumes that these actions are taken after the implementation of Alternative 1. The effective increase in fare is approximately 40 percent for Metro riders, who will have to pay the Glendale fare, and 16 percent for 10-ride card holders, who shift to cash. Applying the elasticity, this translates to 12 percent of Metro pass riders and five percent of 10-ride card riders who will no longer ride. This example is based on the assumptions that 13 percent of Metro pass riders shift to EZ transit pass and 75 percent shift to cash, and that 15 percent of 10-trip card riders shift to the Beeline 31-day pass and 80 percent shift to cash.

Table 4.8
Impacts of No Longer Accepting Metro Passes and Discontinuing the 10-ride Card

Element	Total	Cash	31-day Pass	10-ride Card	EZ Pass	Metro Pass	Other
Current Annual Ridership	2,821,310	1,773,940	153,970	109,337	24,063	452,902	307,098
Ridership, Year 1	2,215,964	1,257,014	102,451	72,436	24,063	452,902	307,098
Change from Metro pass	-51,092	346,913			54,898	-452,902	
Change from 10-ride card	-3,682	57,948	10,806	-72,436			
New Ridership, Year 1	**2,161,191**	1,661,875	113,257	0	78,961	0	307,098
Current Annual Revenue	$425,000	$362,214	$14,920	$11,802	$14,279	$0	$21,784
Farebox Revenue, Year 1	$575,930	$486,221	$25,395	$19,993	$7,250	$0	$37,071
Change from Metro pass	$146,049	$129,017			$17,032	$0	
Change from 10-ride card	$5,883	$23,105	$2,771	-$19,993			
Revised Revenue, Year 1	**$727,862**	$638,343	$28,166	$0	$24,281	$0	$37,071

Source: Glendale Beeline Ridecheck Data and FY 08 Ridership Data

Table 4.8 indicates that the impact of no longer accepting Metro passes is a decrease in ridership but an increase in revenue. The discontinuation of the 10-ride card is minor because of the light usage of this fare medium.

Table 4.9 shows the impact of the Year 2 changes under Alternative 2, with the general cash fare raised to 75 cents and changes to other fare media as described earlier. Alternative 2 assumes that the changes in policy regarding Metro passes and the Beeline 10-ride card have been implemented, and uses the revised ridership and revenue estimates for Year 1 as the base.

Table 4.9
Predicted Impacts of Fare Changes under Alternative 2

Element	Total	Cash	31-day Pass	Other
Revised Ridership, Year 1	2,161,191	1,661,875	113,257	386,059
% change in fare		+50% general +40% S/D	+50%	--
% change in ridership	-12.1%	-14.7%	-15.0%	0.0%
Ridership, Year 2	**1,900,485**	1,418,157	96,268	386,059
Farebox Revenue, Year 1	$727,862	$638,343	$28,166	$61,353
% change in revenue	24.9%	27.2%	27.5%	0.0%
Farebox Revenue, Year 2	**$909,406**	$812,141	$35,912	$61,353

Source: Glendale Beeline Ridecheck Data and FY 08 Ridership Data

Alternative 2 results in an additional 12.1 percent decrease in ridership and an additional 24.9 percent increase in revenue.

Table 4.10 shows the impact of the Year 3 changes under Alternative 3, with the general cash fare raised to $1.00 and changes to other fare media as described earlier. Alternative 3 results

in an additional 8.2 percent decrease in ridership and an additional 18.9 percent increase in revenue.

Table 4.10
Predicted Impacts of Fare Changes under Alternative 3

Element	Total	Cash	31-day Pass	Other
Annual Ridership, Year 2	1,900,485	1,418,157	96,268	386,059
% change in fare		+33% general +43% S/D	+33% general	--
% change in ridership	-8.2%	-10.3%	-10.0%	0.0%
Ridership, Year 3	**1,744,379**	1,271,679	86,642	386,059
Farebox Revenue, Year 2	$909,406	$812,141	$35,912	$61,353
% change in revenue	18.9%	20.3%	20.0%	0.0%
Farebox Revenue, Year 3	**$1,081,263**	$976,816	$43,095	$61,353

Source: Glendale Beeline Ridecheck Data and FY 08 Ridership Data

Summary

Cash is by far the most common method of fare payment on the Beeline system. The second most popular fare payment method is a Metro pass. Cash and Metro pass together account for over 75 percent of all boardings. There are minor differences among local routes, but all local routes show a majority (between 60 and 80 percent) of cash boardings.

The only other fare payment methods that account for at least five percent of all boardings are the Beeline Metrocard, a 31-day pass good only on Beeline local buses, and Metrolink passes or tickets. Nearly all (85 percent) of boardings using Metrolink fare media occur on the express routes (Route 11 and Route 12) on weekdays.

Use of fare elasticities results in realistic estimates of ridership and revenue impacts of proposed fare changes. A three-year phased approach has been assumed for implementation of the alternatives affecting fare levels. Changes to fare policy regarding acceptance of Metro passes and use of the Beeline 10-ride card are assumed to take place during the first year. Increases in the base fare yield the greatest revenue.

4.5 Fare Recommendations

The preceding sections have presented an overall analysis of fares for the Glendale Beeline system. Beeline fares are lower than almost all of the other municipal systems in the Los Angeles area.

Table 4.11 shows the proposed changes to the Beeline fare structure. A phased approach over three years is recommended to achieve fare levels similar to those of peer systems (many of which are implementing or considering fare increases) and to ensure that riders pay a “fair share” of the overall system costs.

Table 4.11
Beeline Fare Recommendations

Fare Category	Current	January 1, 2010	July 1, 2010	July 1, 2011
Regular cash fare	$0.25	$0.50	$0.75	$1.00
Senior/disabled cash fare	$0.15	$0.25	$0.35	$0.50
Regular 31-day pass	$12.00	$24.00	$36.00	$48.00
Senior/disabled 31-day pass	$4.50	$12.00	$18.00	$24.00
10-ride card	$2.00	$4.25	--	--
Interagency transfers	$0.50	No change		
Senior/disabled interagency transfers	$0.25	No change		
Express cash fare	$1.00	$2.00	$3.00	$4.00

Two other alternatives are also recommended for implementation within the next year:

- Discontinue acceptance of Metro passes. Glendale Beeline will continue to accept the EZ transit pass. The Beeline is not reimbursed for boardings using Metro passes, but is reimbursed for EZ transit pass boardings.

- Discontinue the Beeline 10-trip card. Glendale is the only municipal system to offer a time-based pass (the 31-day Metrocard) and a multiple-trip card. The 10-trip card accounts for less than four percent of all boardings.

Table 4.12 shows the impacts of these recommendations on ridership and revenue. Note that because the first increase is slated to take place in the middle of a fiscal year, ridership and revenue impacts reflect only six months of the new fares. Thus, some of the impact from the January 1, 2010 fare change is delayed until FY 2011.

Table 4.12
Ridership and Revenue Impacts of Fare Recommendations

Category	Current	January 1, 2010	July 1, 2010	July 1, 2011
Annual ridership	2,821,000	2,491,000	1,900,000	1,744,000
Annual percentage change in ridership	--	-11.7%	-23.7%	-8.2%
Annual revenue	$425,000	$576,000	$909,000	$1,081,000
Annual percentage change in revenue	--	+35.6%	+57.8%	+18.9%

Glendale Beeline
2009 Line-by-Line Analysis
Chapter 5: On-board Survey Results

5.0 Introduction

As part of the line-by-line analysis, the project team conducted an onboard survey of riders in conjunction with the ridecheck during the period November 1 through 13, 2008. The survey, designed jointly by the project team and Beeline staff, solicited input from riders regarding:

- Trip origin, destination, purpose, and other information regarding the passenger's trip
- Extent and history of transit usage
- Ratings of various service elements
- Desired changes and improvements to the bus system
- Rider demographics

Surveyors distributed and collected surveys during the ridecheck. Surveys were printed in English, Spanish, and Armenian. Passengers were asked to fill out the survey only once.

This report summarizes the results of the on-board survey. Copies of the survey may be found in Appendix D.

5.1 Summary of Local Survey Findings

Beeline riders are using transit primarily for work and school trips: school is the most common trip purpose on weekdays, followed closely by work, and work leads all trip purposes on weekends. Cash is by far the most common fare payment method. Most riders walk to and from their origin and destination, and about 15 percent of all riders transfer during the course of their trips. Beeline riders tend to be frequent, long-time riders. Respondents prefer a fare increase to a service cut, and (not surprisingly) most would prefer a small fare increase.

Most riders get information from the printed schedules, although a majority express willingness to use the Internet to obtain information. Riders are most interested in seeing schedule and frequency information at bus stops. A slight majority express interest in using cell phones/text messaging to obtain real-time information on next bus arrival.

In terms of demographics, Beeline riders are most likely to be female, and to live in households with zero or one car. Riders are of all ages. The most common ethnicity is Latino, but Latino riders do not constitute a majority of all riders.

Beeline riders are very pleased with the service. On a scale of one (poor) to four (great), respondents rate Beeline service at an average of 3.32, a very high rating. Safety on the bus, safety at bus stops, and operator courtesy all receive an average rating of 3.25 or above. The lowest-rated service elements are for "schedules are readily available" (3.08) and "no need to transfer" (3.13), but even these lowest scores are good. Improved frequency was the most requested improvement among Beeline riders. An analysis of performance versus importance for the eleven service attributes indicates that cleanliness/comfort is the most critical element in terms of needed improvements.

5.2 Local Survey Findings: Survey and Trip Characteristics

Riders completed a total of 2,848 usable surveys. Figure 5.1 summarizes responses by language. Almost 80 percent of all respondents answered the survey in English. Of the remaining surveys, twice as many surveys were completed in Spanish as in Armenian. Even so, the seven percent share for Armenian-language surveys supports the decision to print the survey in a third language.

Figure 5.1
Survey Responses by Language

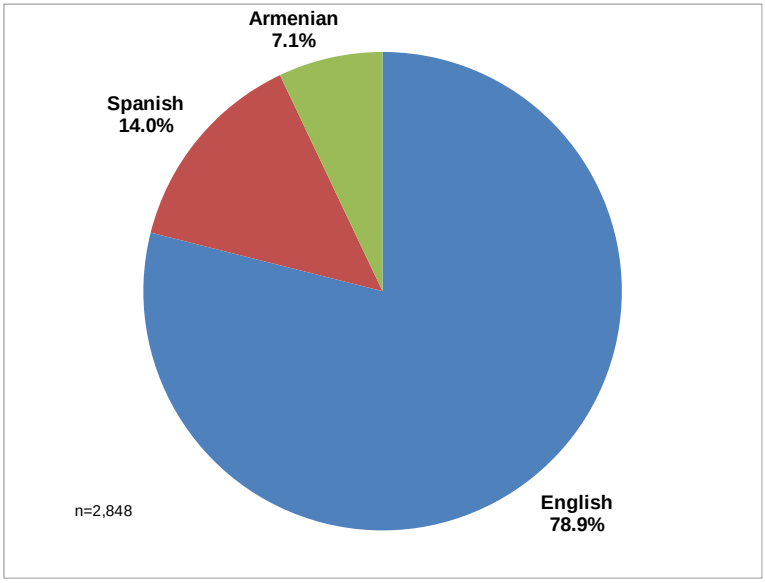


Figure 5.2 shows survey responses by Beeline bus line. As expected, Route 3 was the biggest contributor with over 25 percent of all responses. The number of responses correlates with the number of riders for each route. Route 4 is slightly underrepresented in the survey (14 percent of responses compared to 20 percent of ridership), and the express routes are somewhat overrepresented.

Figure 5.2
Survey Responses by Line

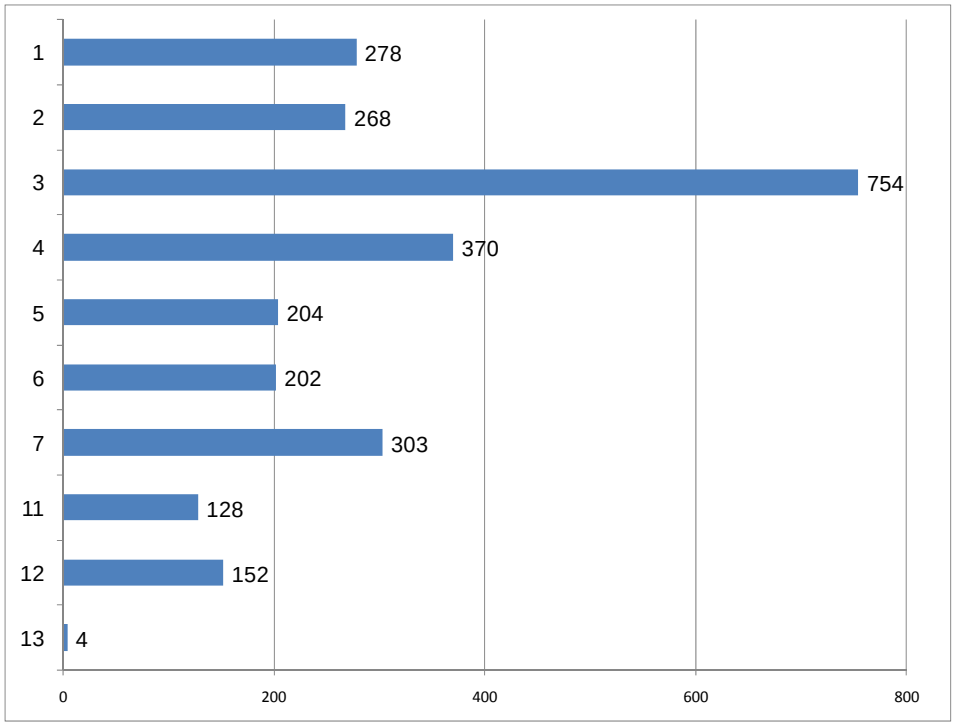
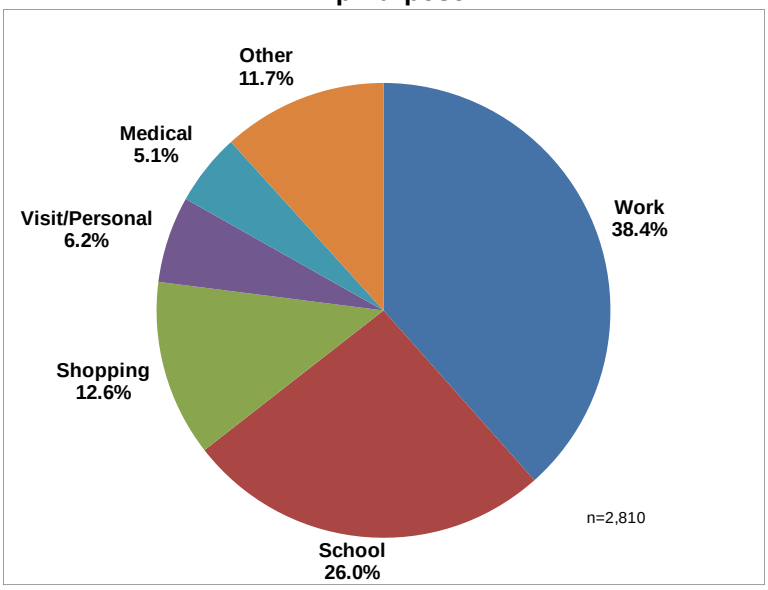


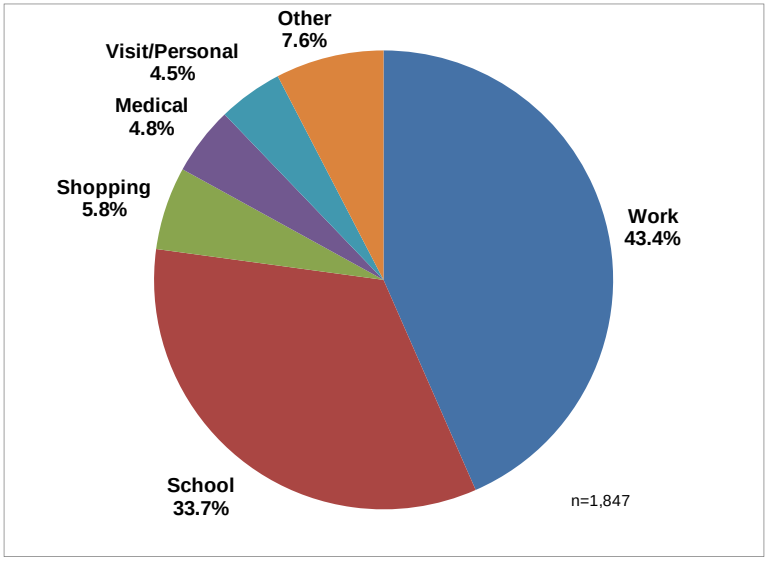
Figure 5.3 presents a breakdown of trip purpose. Work and school together account for almost two-thirds of all trip purposes.

Figure 5.3
Trip Purpose



It is helpful in analyzing trip purpose to examine weekdays and weekends separately. Figures 5.4 and 5.5 show trip purpose on weekdays and weekends, respectively. School is the single largest trip purpose on weekdays, followed closely by work. Together, school and work account for over 75 percent of all weekday trips.

Figure 5.4
Trip Purpose - Weekdays



Work is also the largest trip purpose on weekends at 29 percent of all trips, followed by shopping at 25 percent. School-related weekend trips may be for extracurricular activities or for the library.

Figure 5.5
Trip Purpose – Weekends

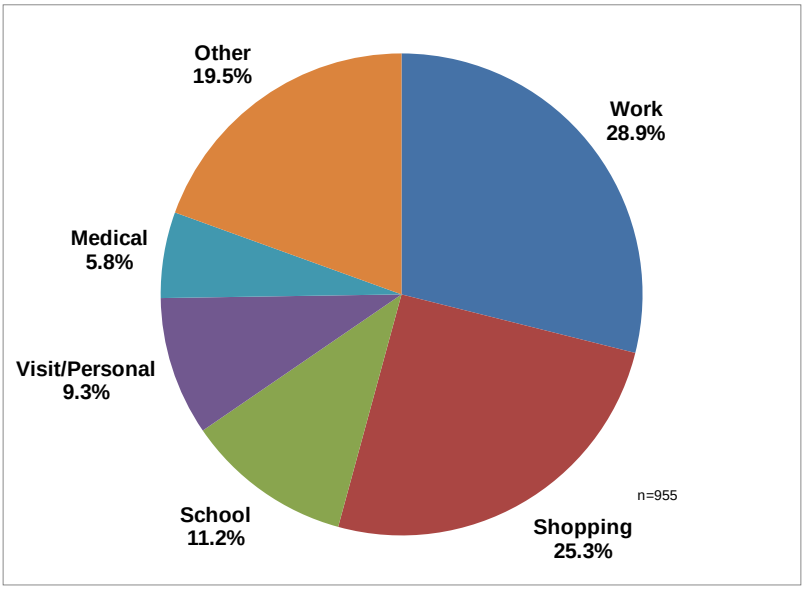
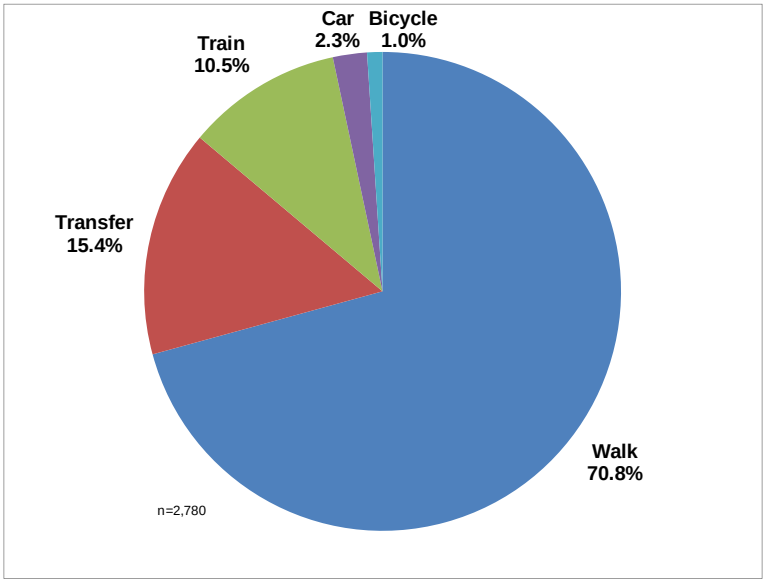


Figure 5.6 shows how riders got to the bus. Over two-thirds of all riders report walking to the bus stop, and 15 percent transfer from another bus. Routes 11 and 12 account for most (71 percent) of the access by train.

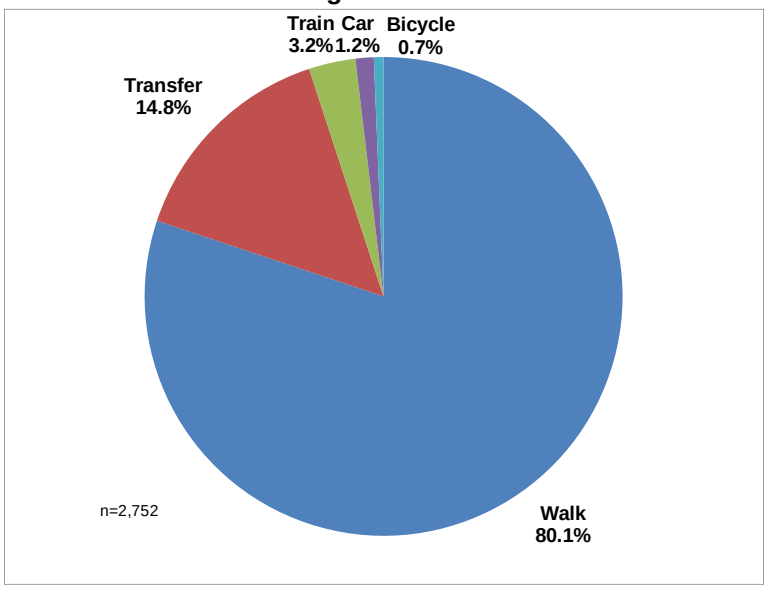
Figure 5.6
Mode of Access to the Bus



Over 90 percent of all transferring passengers come from Metro or from another Beeline bus. Metro accounts for 56 percent of reported transfer boardings. Beeline accounts for 36 percent. Metro Rapid Line 780 (Pasadena to West Los Angeles via Colorado Boulevard and Hollywood Boulevard) is the leading route to transfer from, with over 10 percent of all transfers to a Beeline bus coming from this route.

Figure 5.7 shows what passengers did when they got off the bus. Over 80 percent of passengers walk to their final destination, while 15 percent transfer to another route. Mode of egress is very similar to mode of access (Figure 5.4), with a slightly greater propensity to walk upon leaving the bus. This may be due to more passengers filling out the survey on their first trip of the day in the morning.

Figure 5.7
Mode of Egress from the Bus



Among transferring passengers, 89 percent transfer either to another Beeline line or to Metro. Internal Beeline transfers account for 54 percent of transfers to another bus or train, while Metro accounts for 36 percent. The most frequently reported transfer is to Beeline Route 1, followed by Beeline Route 3 and Metro Rapid Line 780.

Figure 5.8 indicates ridership history. The majority of riders (52 percent) have been Beeline customers for more than two years. At the other end of the spectrum, about one out of every six riders is new to the system within the past six months.

Figure 5.8
Ridership History on Beeline

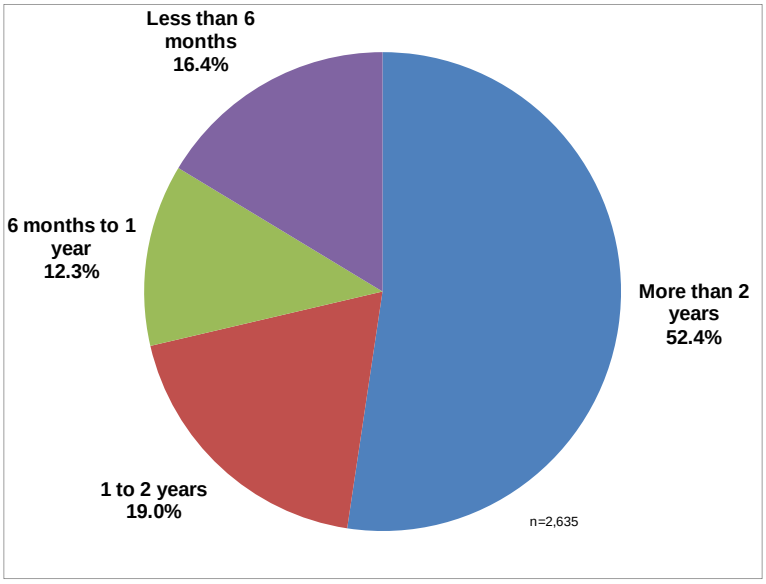


Figure 5.9 shows the reported frequency of transit ridership in a typical week. On-board surveys tend to under-report infrequent ridership, since passengers who ride only one or two days per week or less have a lesser chance to be surveyed. Administering this survey over multiple days lessened concerns about under-reporting of infrequent ridership. Seventy percent of respondents ride Beeline buses at least four days per week.

Figure 5.9
Reported Frequency of Ridership

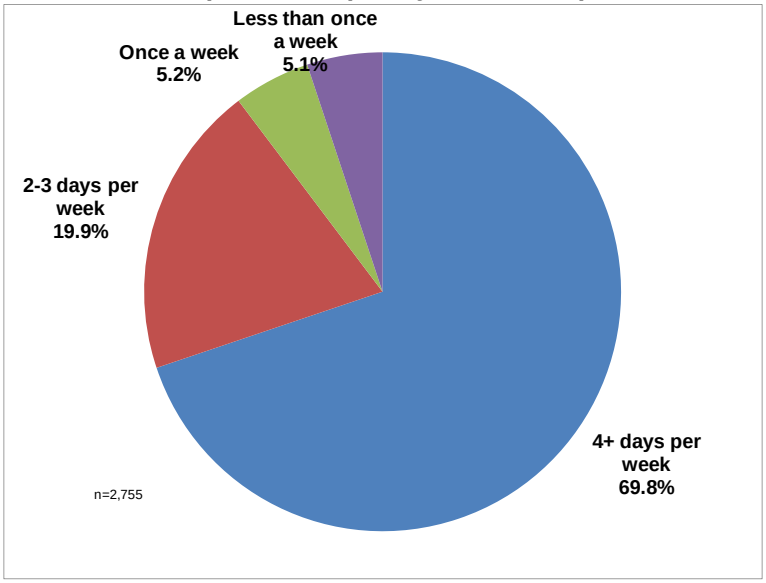
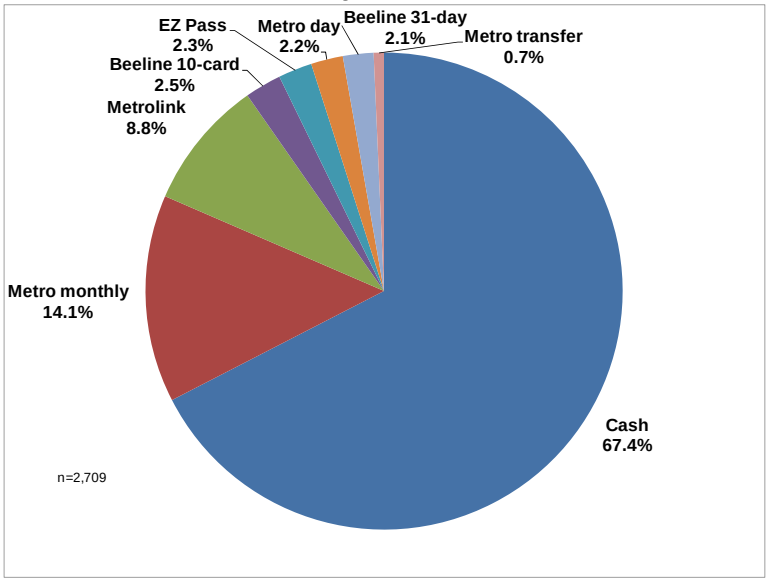


Figure 5.10 presents a breakdown of the method of fare payment as reported by respondents. Three fare media (cash, the Metro monthly pass, and a Metrolink pass or ticket) are used by 90 percent of all respondents. The Beeline prepaid fare media make up only five percent of all respondents. Cash is by far the most common fare payment method.

It is worth noting differences between this and previous tables. The transfer percentage appears low compared to the results in Figure 5.4 (mode of access), but this total only includes those using transfers, not transfers using a Metro pass or transfers between Beeline routes (which are a separate fare).

Figure 5.10
Fare Payment Method

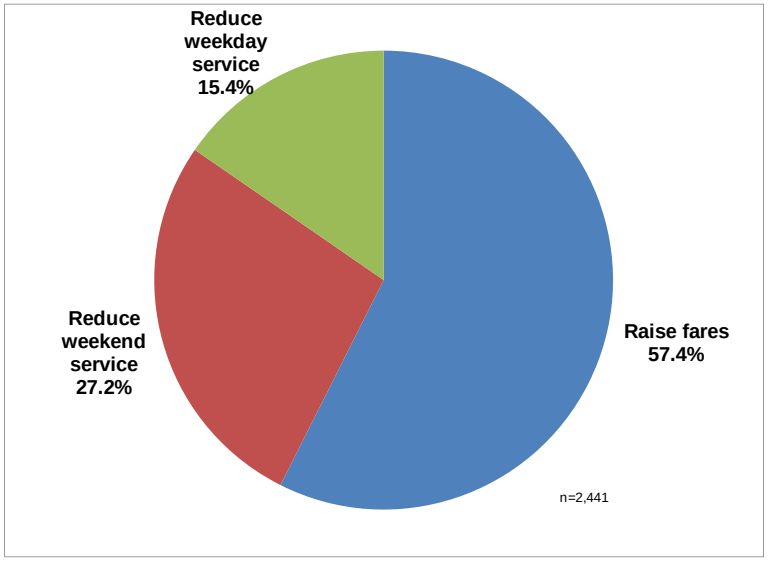


5.3 Local Survey Findings: Fares and Provision of Information

The survey included two questions regarding fare levels and four questions related to ways to obtain information about Beeline services. Fare responses are presented first.

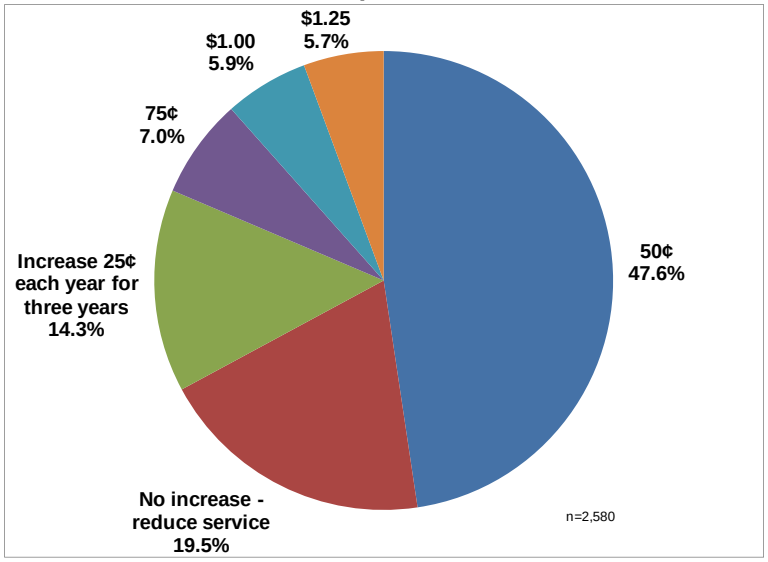
The first fare question asked: "Increased costs require the Glendale Beeline to raise fares or reduce service. Which option would you prefer?" Figure 5.11 shows a majority (57 percent) in favor of a fare increase, while 27 percent would prefer to reduce weekend service and only 15 percent to reduce weekday service.

Figure 5.11
Preference between Raising Fares and Reducing Service



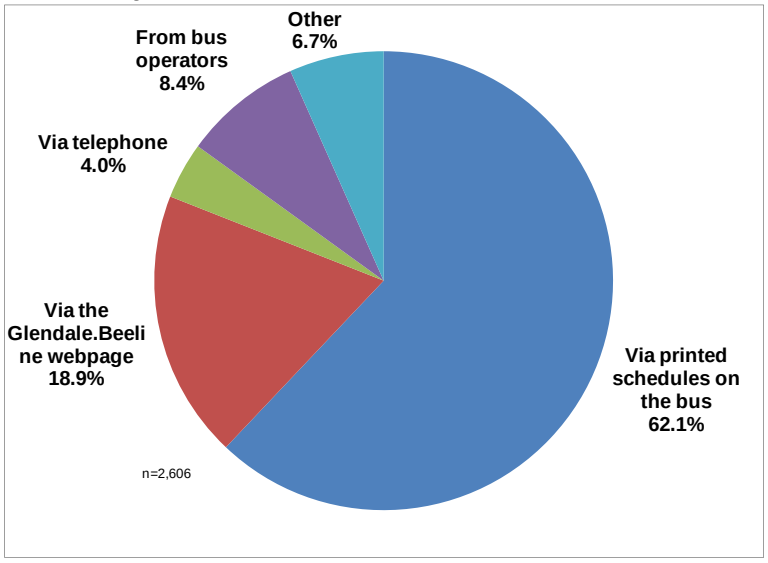
The second fare question asked about the maximum fare the respondent would be willing to pay on the Beeline, given a fare of $1.00 on Burbank Bus and $1.25 on Metro. Over 80 percent would accept some fare increase, with most of those (48%) opting for the lowest choice of 50¢. A lower percentage opted for a service decrease in lieu of a fare increase on this question compared with the previous question. Fourteen percent chose the gradual increment option.

Figure 5.12
Maximum Acceptable Beeline Fare



The next four questions addressed how to provide information to Beeline customers. Figure 5.13 indicates how respondents currently get Beeline schedule information. The most common source of information is printed schedules available on the buses, although almost 20 percent obtain information via the GlendaleBeeline.com webpage. The most common "other" responses were "ask others" and "nextbus.com."

Figure 5.13
Primary Current Source of Bus Schedule Information



Respondents are willing to use the Internet to access Beeline maps, schedules, and a trip planner, as shown in Figure 5.14. The margin (63 percent willing) is somewhat surprising, and may be related to the number of student riders.

Figure 5.14
Willingness to Use the Internet

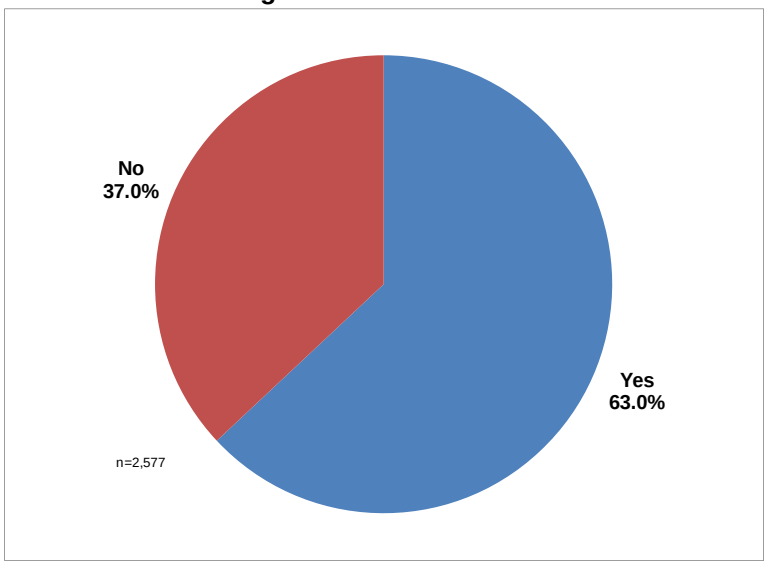
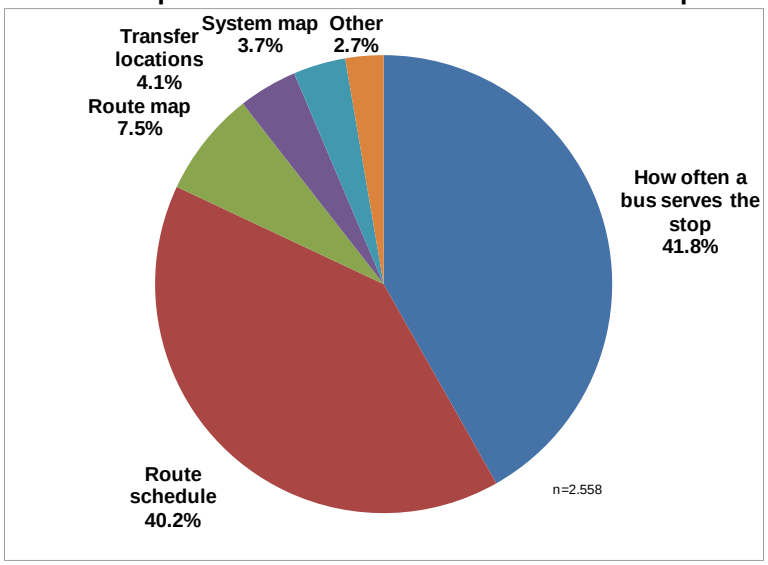


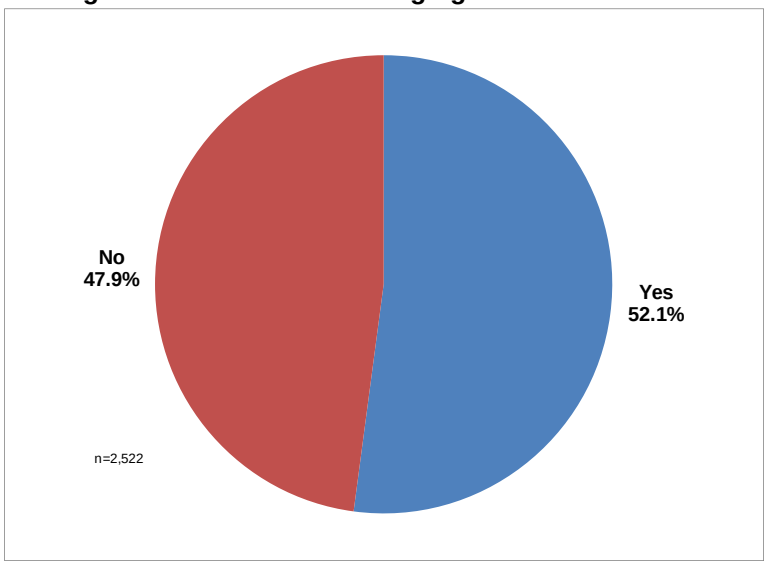
Figure 5.15 presents the most important information to provide at Beeline bus stops. Respondents are most interested in frequency and times of service for their route. Maps and transfer locations are useful information, but are less important than frequency and schedule information. The most common answers in the "other" category were real time arrival information and "all of the above."

Figure 5.15
Most Important Information to Provide at Bus Stops



The survey included the following question: "Would you like to use your cell phone/text message to find out when your bus will arrive at your stop? (Cellular fees may apply)." Figure 5.16 shows that slightly more than half of all respondents are interested in this option.

Figure 5.16
Interest in Using Cell Phones/Text Messaging for Next Bus Arrival Information



5.4 Local Survey Findings: Rider Demographics

This section reports on demographic characteristics of riders, including age, gender, ethnicity, vehicle ownership, and mobility impairment.

Figure 5.17 shows the age of respondents. The Beeline attracts riders of all ages. The single biggest category is between the ages of 18 and 24. This category includes many Glendale Community College riders.

Figure 5.17
Age of Beeline Riders

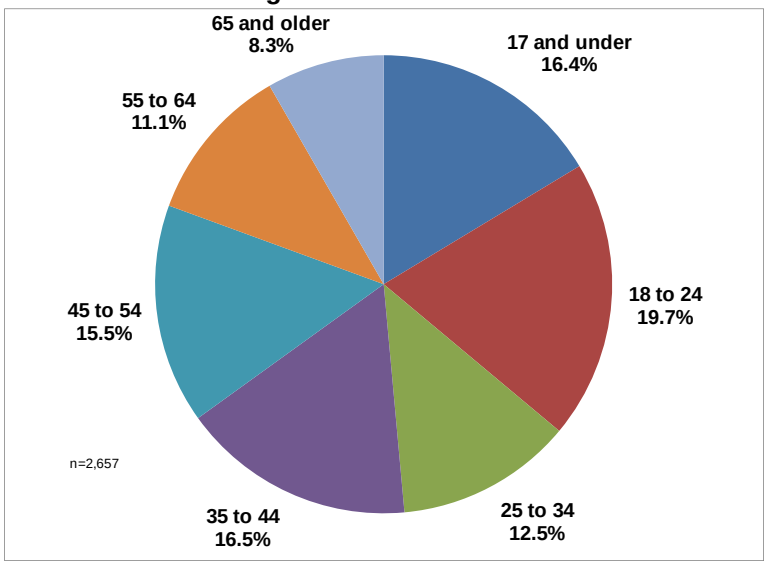


Figure 5.18 shows the gender of respondents. Local transit riders typically include more females than males, and the Glendale Beeline at 60 percent female is no exception.

Figure 5.18
Gender of Beeline Riders

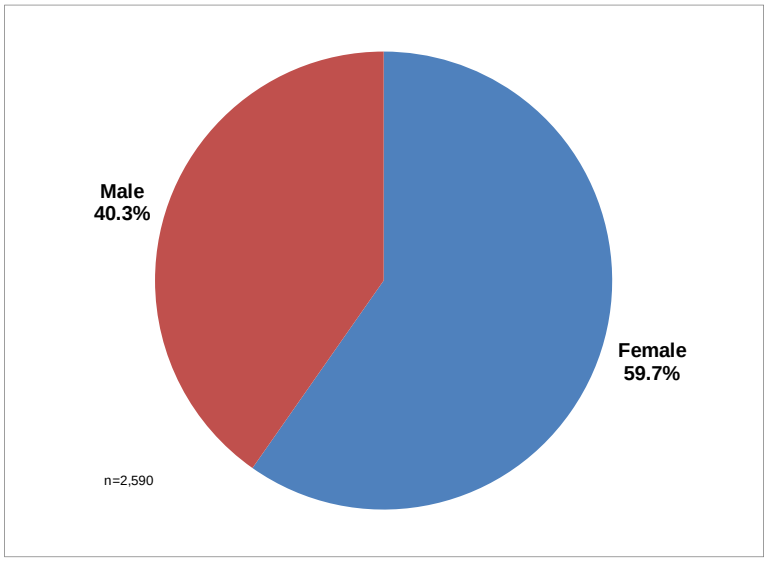


Figure 5.19 shows mobility impairment. About 1 in 6 Beeline riders consider themselves mobility-impaired

Figure 5.19
Beeline Riders Who Consider Themselves Mobility-Impaired

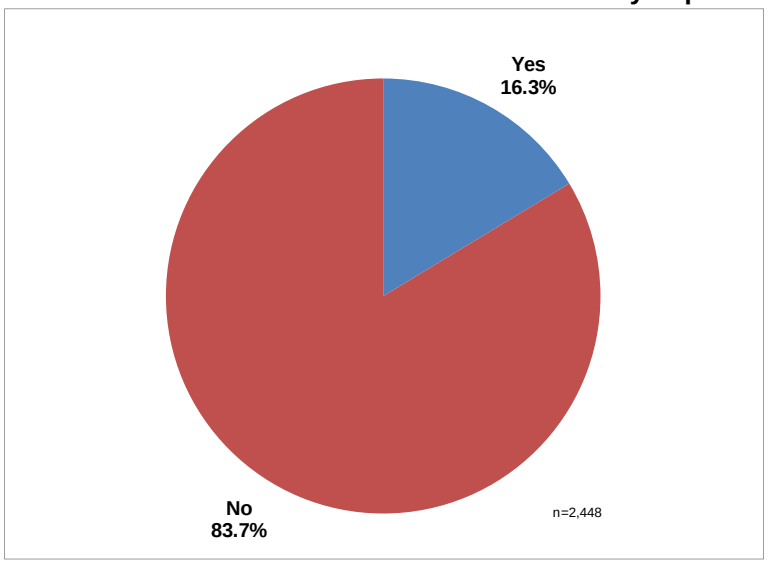


Figure 5.20 shows household vehicle ownership among Beeline riders. Over one-third of riders live in households with zero vehicles. One-vehicle households account for 31 percent of all riders, while 35 percent of riders report multiple vehicles in their households.

Figure 5.20
Household Vehicle Ownership among Beeline Riders

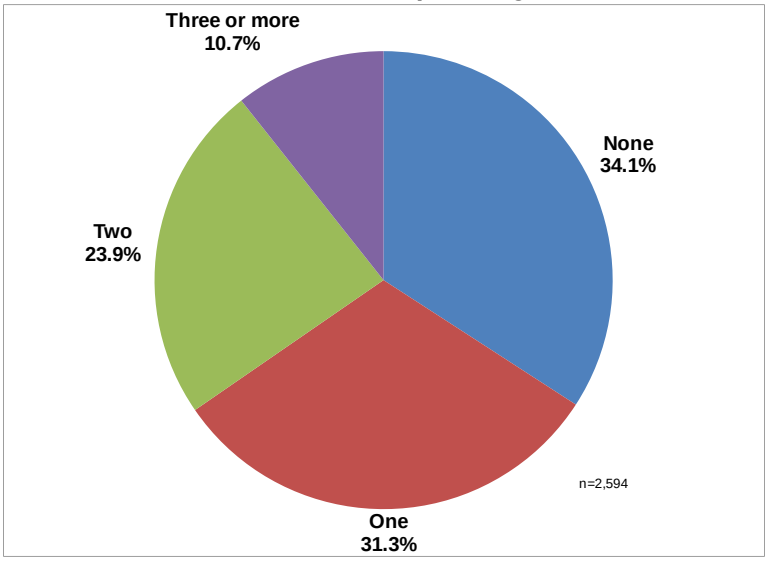
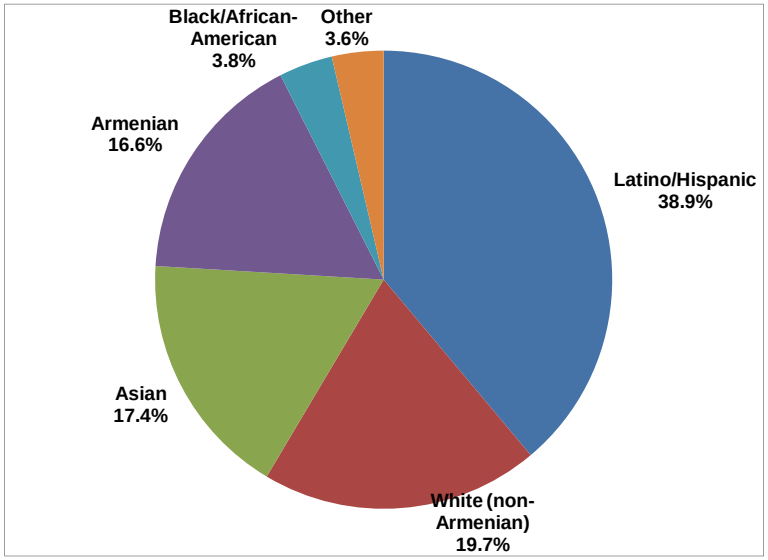


Figure 5.21 shows rider ethnicity. No single ethnicity accounts for a majority of Beeline riders. The largest ethnic ridership group is Latino/Hispanic, followed by white non-Armenian, Asian, Armenian, and African-American. The "other" category includes Filipino, Pacific Islander, and mixed-race.

Figure 5.21
Ethnicity of Beeline Riders



5.5 Local Survey Findings: Perceptions of Transit Service Quality

The survey asked riders to rate Beeline's performance, on a scale of 1 to 4 with 1 being "poor" and 4 being "great," for seven different service characteristics as well as to provide an overall rating of Beeline service. Figure 5.22 shows the results. Table 5.1 presents rider perceptions of service, and includes the weighted average score (used in Figure 5.22) of all ratings for each service element as well as the distribution of actual ratings. The highest rated items are safety at bus stops, safety on the bus, and operator courtesy. Average scores for these four items are all 3.25 or better. The lowest ratings among all service elements are for schedules are readily available (3.08) and no need to transfer (3.13), but even these lowest scores are respectable. The average score for overall Beeline service is 3.32, indicating a very high level of passenger satisfaction with Beeline.

Figure 5.22
Average Ratings of Beeline Service Elements

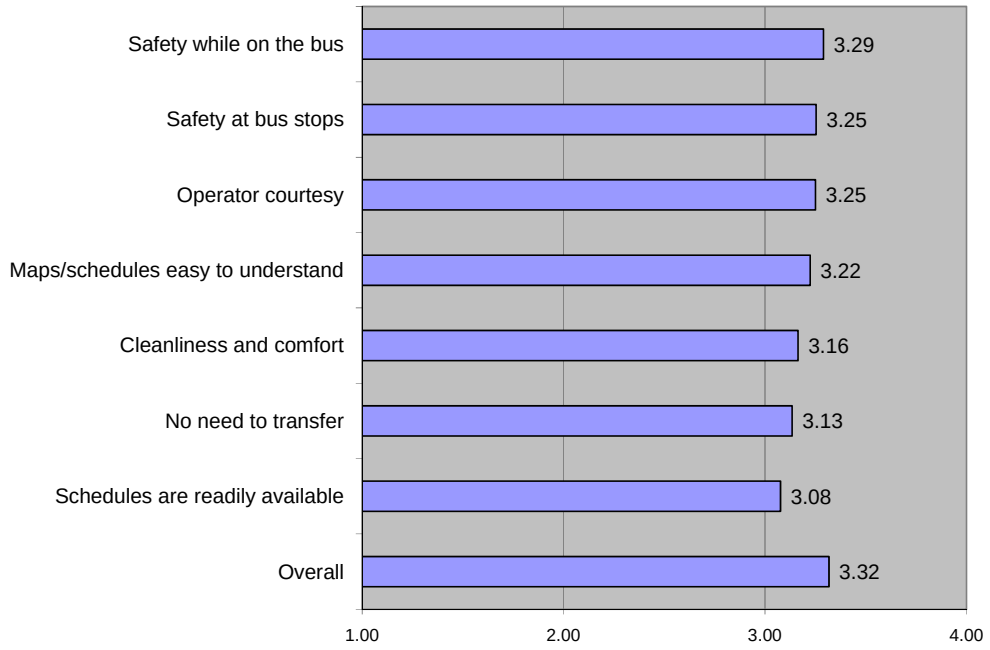


Table 5.1
Detailed Ratings of Beeline Service Elements

Service Element	Average Score	Number of Respondents Rating by Score				Total Respondents
		1 Poor	2 Fair	3 Good	4 Great	
Safety while on the bus	3.29	62	235	964	1,020	2,281
Safety at bus stops	3.25	71	239	1,046	971	2,327
Operator courtesy	3.25	102	291	843	1,072	2,308
Maps/schedules are easy to understand	3.22	78	298	965	971	2,312
Cleanliness and comfort	3.16	100	347	957	929	2,333
No need to transfer	3.13	114	348	841	867	2,170
Schedules are readily available	3.08	121	402	981	822	2,326
Overall Rating	**3.32**	**44**	**197**	**1,046**	**1,015**	**2,302**

5.6 Local Survey Findings: Detailed Analysis of Service Attribute Ratings by Riders

In designing service improvements, Beeline staff needs to know not only the customer ratings on individual service attributes but also the importance of each attribute in terms of overall satisfaction. The previous section focused on customer ratings; in this section, we consider the ratings together with the relative importance of each service attribute.

The simplest way to measure importance is to ask the customer to rate each element on a scale of 1 to 4, similar to the performance ratings. The drawback of this method is that it lengthens both the survey instrument and time needed to complete the survey, which in turn could diminish the response rate. An alternate technique to measure the importance of each service attribute is to derive importance by examining the relationship of each attribute to overall satisfaction.

The Bay Area Rapid Transit District in Oakland, CA has developed a practical methodology to derive the importance of individual service attributes.[1] The methodology uses bivariate correlation analysis to estimate the importance of each service attribute. Specifically, Pearson correlation coefficients are calculated between the performance rating of each service attribute and the overall Beeline service rating. While there is a degree of intercorrelation among the service attributes, the Pearson correlation coefficients are an effective means to measure the relative importance of each attribute. Importance is derived by calculating the ratio between the correlation coefficient for each attribute and the median correlation coefficient. An index score of 100 is assigned to the median correlation coefficient. Service attributes with a score above 100 are more correlated with overall satisfaction (as measured by the overall Beeline rating), while service attributes with a score below 100 are less correlated.

Table 5.2 shows the Pearson correlation coefficient and the importance score for each service attribute. Cleanliness and comfort, operator courtesy, and safety on the bus rank highly in terms of importance, while no need to transfer, ease of understanding and schedule availability are relatively less important.

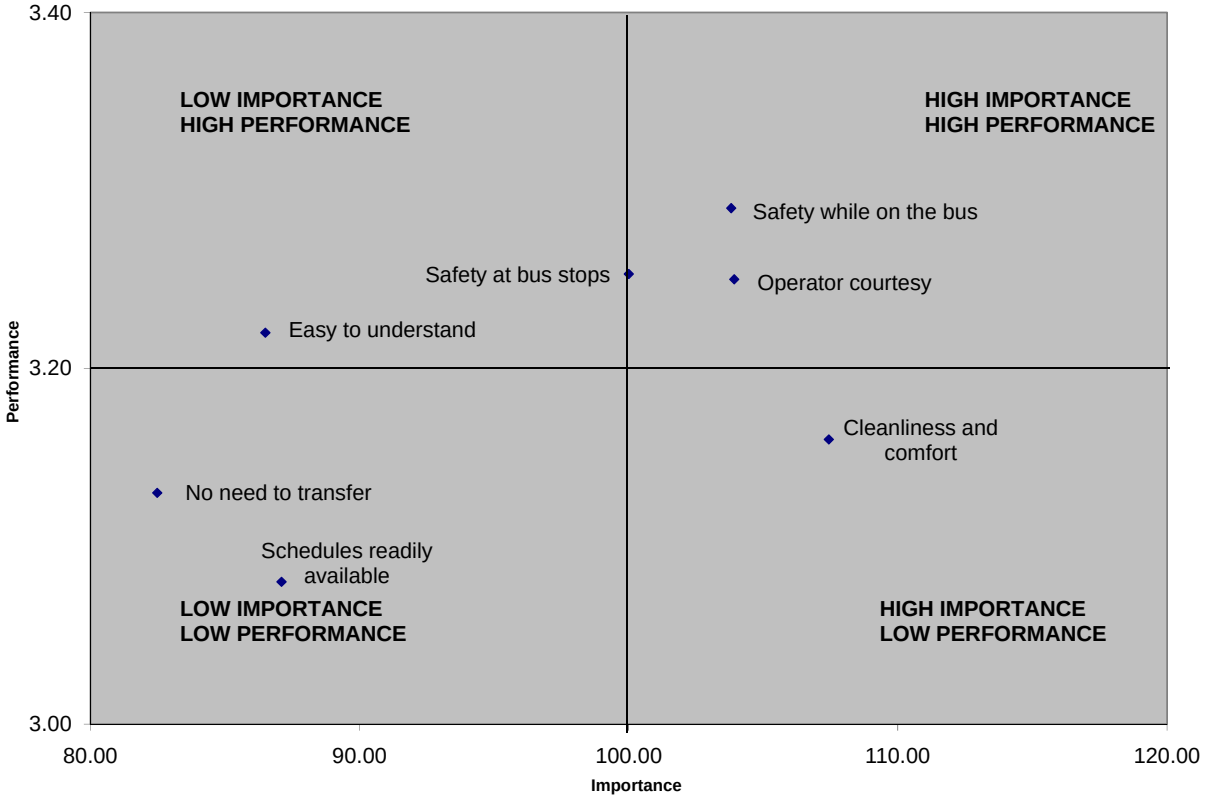
Table 5.2
Importance of Service Elements

Service Attribute	Pearson Correlation Coefficient	Importance Index
Cleanliness and comfort	0.619	107.43
Operator courtesy	0.599	103.92
Safety while on the bus	0.598	103.81
Safety at bus stops	0.576	100.00
Schedules readily available	0.502	87.10
Easy to understand	0.498	86.50
No need to transfer	0.475	82.48

Performance and importance can be related through scatter diagrams, with derived importance on the x-axis and performance ratings on the y-axis. The scatter diagram (Figure 5.23) is divided into quadrants, with an importance score of 100 and a performance rating of 3.20 (just above a "good" rating of 3.0) serving as the dividing lines. The 3.20 dividing line for performance is high; a more typical dividing line would be 3.00. Given the high ratings for Beeline service, however, a higher dividing line is needed to make this quadrant exercise meaningful.

[1] Aaron Weinstein, "Customer Satisfaction Among Transit Riders – How Customers Rank the Relative Importance of Various Service Attributes." **Transportation Research Record 1735**, 2000.

Figure 5.23
Importance vs. Performance for Beeline Service Elements



Items in the upper right hand quadrant represent important attributes with high performance ratings. These are things that Beeline does well that are important to riders. Beeline should take whatever actions are required to ensure continued high performance ratings on these attributes. Safety on the bus, operator courtesy, and safety at bus stops are service elements that fall within this quadrant.

Items in the upper left hand quadrant receive high marks in terms of performance but are relatively unimportant to riders. Often, attributes in this quadrant receive lower importance ratings from passengers precisely because the agency does a good job in these areas. Riders, like everyone else, tend to take areas in which their needs are met for granted. This suggests that Beeline needs to continue to monitor service delivery in these areas to ensure high performance, but that these elements of service are not top priorities for improvements. The only attributes within this quadrant is maps and schedules are easy to understand.

Items in the lower left hand quadrant are relatively unimportant to riders and relatively low-scoring in terms of performance. While performance levels are relatively low for these attributes, these are not strong candidates for improvement due to their low levels of importance to riders. Service elements in this quadrant include no need to transfer and schedules readily available.

Items in the lower right hand quadrant are key priorities for Beeline. Riders consider these attributes important, but current performance ratings are less than desired. Cleanliness and comfort is the only element in this quadrant.

5.7 Local Survey Findings: Improvements

The survey included a question, "If you could make only ONE improvement to the bus system, what would it be?" Surveyors recorded riders' answers verbatim, and these responses were later coded into 25 categories. Almost 50 percent of all riders surveyed proposed an improvement. Table 5.3 presents the results, including all improvements mentioned by at least 2.5 percent of respondents.

Table 5.3
Riders' Suggestions for One Improvement to the Beeline Bus System

Improvement	#	%
More frequent buses	330	23.4%
Improved on-time reliability	166	11.8%
Span of service	115	8.2%
More weekend service	106	7.5%
More friendly/better operators	96	6.8%
Bigger buses	85	6.0%
New or expanded routes	75	5.3%
Better quality/new buses	59	4.2%
Working A/C and heat	49	3.5%
Added amenities	39	2.8%
Faster service	36	2.6%
Other	253	18.0%
Total	1,409	100.0%

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Glendale Beeline
2009 Line-by-Line Analysis
Chapter 6: Regional Service Coordination

6.0 Introduction

The City of Glendale is located within an extensive transit network consisting not only of Beeline routes but also of service operated by Metro, and Los Angeles Department of Transportation (LADOT). Beeline connects to Pasadena ARTS service at JPL and on paper, there is also a connection between Beeline Route 12 and two Burbank Bus routes[1] at the Burbank Regional Intermodal Transit Center. The two Burbank routes are designed as connectors between Metrolink and employment sites within Burbank, so transfer opportunities are minimal.

Metro is the most important system in terms of regional service coordination because of the sheer volume of Metro service within Glendale. Metro provided ridership data for the fourth quarter of 2008 (October through December) for several of its routes. This chapter describes all routes serving the Glendale area, with a particular focus on Metro lines. Section 6.1 provides a brief description of each Metro line, with ridership data where available. Section 6.2 briefly presents information on LADOT and ARTS routes within the Glendale area. Section 6.3 identifies issues and opportunities for enhanced regional service coordination.

6.1 Metro Lines Operating within the Beeline Service Area

Table 6.1 identifies Metro lines serving Glendale and La Cañada Flintridge. Major corridors are noted for each route, along with the prevailing (i.e., typical) headway and span of service, defined as extending from the time the first bus leaves Glendale in the morning to the time the last bus leaves Glendale at night. Two Metro Rapid lines, Line 780 and Line 794, serve Glendale. Lines 92 and 180/181 operate all night. Among the other routes, Lines 90/91, 92, 94, and 603 provide very frequent service, particularly during peak periods.

Most of the Metro routes are regional in nature. The individual route descriptions identify other areas served by the Metro routes.

[1] Burbank Bus is discontinuing its Downtown Burbank Loop effective August 17, 2009.

Table 6.1
Metro Lines Operating within the Beeline Service Area

Line	Major Corridors	Prevailing Headway			Service Span in Glendale.		
		Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
81	Colorado St (at Eagledale)	7-15 peak 12 midday	12	13	4:32a- 12:22a	4:45a- 12:22a	4:52a- 12:23a
84	Colorado St (east of Verdugo)	20-30	30	24-30	4:16a-9:28p	4:38a- 8:26p	5:28a- 8:27p
90/91	Glendale Av and others	6-12 peak 30 midday	30	30	4:36a- 11:46p	5:23a- 11:46p	5:30a- 11:46p
92	Brand Blvd Glenoaks Blvd	10 peak 25 midday	20	20	24 hours	24 hours	24 hours
94	San Fernando Rd	10-14 peak 24 midday	24-30	26	5:00-1:24a	5:02- 1:24a	6:01- 1:24a
96	Victory Blvd	20-30	30	45	5:08a-8:43p	5:52a- 8:59p	7:07a- 8:40p
177	Oak Grove Dr/JPL	30	--	--	6:01a-6:53p	--	--
180/181	Central Av Broadway	12 peak 15 midday	15	15	24 hours	24 hours	24 hours
183	Multiple	60	--	--	5:18a-7:18p	--	--
201	San Fernando Rd Pacific Av Broadway Chevy Chase Dr	40	60	60	5:20a-7:43p	7:02a- 7:31p	7:02a- 7:31p
268	Oak Grove Dr/JPL	30 peak	60	60	6:36-8:39a 3:02-8:22p	8:25a- 7:25p	8:25a- 7:25p
603	San Fernando Rd Pacific Av Colorado St	10 peak 12 midday	20	20	5:13a- 10:49p	6:12a- 10:49p	6:12a- 10:49p
685	Verdugo Rd	30	--	--	6:13a-9:01p	--	--
780	Central Av Broadway	8-12 peak 15 midday	15	15	5:30a-8:15p	7:15a- 6:30p	7:15a- 6:30p
794	San Fernando Rd	10-14 peak 24 midday	24-30	26	5:09a-8:38p	6:53a- 8:06p	6:46a- 7:57p

Source: Metro Timetables

Line 81 Eagle Rock – Exposition Park via Figueroa Street

Metro Line 81 operates between the Harbor Freeway Green Line Transitway Station and Glendale via downtown Los Angeles. Only a small portion of the route is within Glendale: along Broadway, Eagledale Avenue, and Colorado Street along its turnaround path at its northern terminus just inside the eastern city limits of Glendale. Within the Glendale area, Line 81 operates from early in the morning to after midnight.

Line 81 serves the communities of Glendale, Eagle Rock, Highland Park, Cypress Park, downtown Los Angeles, Exposition Park, and south Los Angeles. Prevailing headways are seven to 15 minutes during weekday peak periods (not all trips serve Glendale) and 12 to 13 minutes at other times.

Transfers between Line 81 and Beeline Routes take place at only one location:

- Route 6: Colorado & Eagledale.

Weekday ridership on Line 81 within the Beeline service area is summarized in Table 6.2. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings.

Table 6.2
Metro Line 81 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Colorado & Eagledale	2	59	76	5

Source: Metro ridership counts, October – December 2008

Colorado & Eagledale is the only stop on Line 81 within the City of Glendale.

Line 81 serves Glendale only on its periphery, but does provide connections to Eagle Rock and downtown Los Angeles. This route does not have a major role in providing mobility within Glendale.

Line 84 Eagle Rock Boulevard – Cypress Avenue

Metro Line 84 operates between downtown Los Angeles and Glendale via Eagle Rock Boulevard and Cypress Avenue. Only a small portion of the route is within Glendale: on Colorado Street, Verdugo Road, and Broadway, just inside the eastern city limits of Glendale. Within the Glendale area, Line 84 operates from early in the morning to 9:30 p.m. on weekdays (8:30 p.m. on weekends).

Line 84 serves the communities of Eagle Rock, Highland Park, Glassell Park, Cypress Park, Elysian Park, and downtown Los Angeles. This route is interlined with Metro Line 68, which serves East Los Angeles, Monterey Park, and Montebello.

As noted in Table 6.1, prevailing headways are 20 minutes during weekday peak periods and 30 minutes at most other times.

Transfers between Line 84 and Beeline Routes take place at only one location:

- Route 6: Colorado & Eagledale.

Weekday ridership on Line 84 within the Beeline service area is summarized in Table 6.3. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings.

Table 6.3
Metro Line 84 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Colorado & Eagledale – Broadway & Eagledale	1	62	130	14

Source: Metro ridership counts, October – December 2008

There are no stops with over 70 boardings or alightings in one direction on Line 84 within the Beeline service area. The most active stop is Colorado & Eagledale, with 1 boarding and 62 alightings northbound and 44 boardings and 7 alightings southbound.

Line 84 serves Glendale only on its periphery, but does provide connections to Eagle Rock and other communities. This route does not have a major role in providing mobility within Glendale.

Line 90/91 Los Angeles – Sunland via Foothill Boulevard, Cañada Boulevard, and Glendale Avenue

Metro Line 90/91 operates between downtown Los Angeles and Sunland in the San Fernando Valley. Traveling north, Line 90/91 enters Glendale via San Fernando Road and travels via Glendale Avenue, Cañada Boulevard, and Verdugo Road. At Verdugo & Florencita, the routes diverge: Line 90 travels via Verdugo road, Montrose Avenue and Pennsylvania Avenue to Foothill Boulevard; Line 91 operates via Florencita Street, south on Ocean View Boulevard, west on Honolulu Avenue, north on La Crescenta Avenue, and west on Foothill Boulevard. The two routes rejoin at Foothill & La Crescenta. Within the Glendale area, Line 90/91 operates from early in the morning to after 11 p.m.

Line 90/91 serves the communities of Sunland, Tujunga, far north Glendale, La Crescenta, Montrose, Glendale, Glassell Park, Lincoln Heights, Cypress Park and downtown Los Angeles. Service is very frequent within peak periods (every six to 12 minutes). At other times, the headway is 30 minutes. Where the routes diverge in La Crescenta and far north Glendale, individual route headways are 12 to 24 minutes in the peak periods and 60 minutes at other times.

Line 90/91 is the sole route serving South Glendale Avenue south of Colorado Street. Line 90/91 and Beeline Route 3 both serve Glendale Avenue north of Colorado Street to GCC (Beeline Route 7 also serves Glendale Avenue between Monterey Road and GCC). Line 90/91 and Beeline Route 3 overlap along a short segment of Verdugo Road between Cañada Boulevard and Honolulu Avenue. Beeline Route 3 and Line 91 travel together along Honolulu and La Crescenta Avenues until Foothill Boulevard, where Route 3 turns east and Line 91 turns west.

Transfers between Line 90/91 and Beeline Routes take place at the following locations:

- Route 3: stops along Glendale between Broadway and GCC, Verdugo & Honolulu, La Crescenta & Honolulu, Foothill & La Crescenta;
- Route 4: Glendale & Chevy Chase and Glendale & Broadway;
- Route 6: Glendale & Colorado;
- Route 7: stops along Glendale between Monterey and GCC;
- Route 13: Glendale & Broadway and Glendale & California.

Weekday ridership on Line 90 and 91 within the Beeline service area is summarized in Table 6.4. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, northbound boardings and alightings at GCC are counted in the GCC – Verdugo & Honolulu segment and southbound boardings and alightings at GCC are counted in the Glendale & Colorado – GCC segment. The segment with the most passenger activity is Glendale & Colorado – GCC, where Beeline Routes 3 and 7 overlap Line 90/91, followed by the segment along South Glendale Avenue where Line 90/91 is the only transit service. Where Lines 90 and 91 diverge, Line 91 (via Honolulu and La Crescenta) is slightly stronger than Line 90; Beeline Route 3 overlaps Line 91 for most of this segment. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings. Interestingly, this pattern does not apply to South Glendale Avenue; many riders along this segment are traveling north within Glendale or to GCC.

Table 6.4
Metro Line 90/91 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	1,228	1,603	1,504	1,162
San Fernando & Rosslyn – Glendale & Colorado (South Glendale Av)	373	335	387	384
Glendale & Colorado – GCC	486	536	612	482
GCC – Verdugo & Honolulu	120	306	205	76
Verdugo & Honolulu – Foothill & Pennsylvania via Montrose (90)	68	141	107	80
Verdugo & Honolulu – Foothill & Pennsylvania via Honolulu (91)	100	131	104	95
Foothill & Pennsylvania – Foothill & Lowell	81	154	89	45

Source: Metro ridership counts, October – December 2008

Table 6.5 indicates major stops (defined as over 100 weekday boardings or alightings in one direction) on Line 90/91 within the Beeline service area. Glendale & Broadway and GCC are busy stops in both directions, while Glendale & San Fernando has over 100 northbound boardings.

Table 6.5
Major Stops on Metro Line 90/91 within the Beeline Service Area

Stop	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Glendale & Broadway	294	133	97	259
Cañada & GCC	91	196	163	86
Glendale & San Fernando	102	34	0	11

Source: Metro ridership counts, October – December 2008

Line 90/91 is a strong route providing frequent service. Within Glendale, it provides an important connection between GCC and the South Glendale Avenue neighborhood. Ridership along South Glendale Avenue is substantial. The overlap with Routes 3 and 7 south of GCC is

not duplicative – each of these routes provides a connection to a different area of Glendale (or the region, in the case of Line 90/91).

Line 92 Los Angeles – Sunland via Foothill Boulevard, Cañada Boulevard, and Glendale Avenue

Metro Line 92 operates between downtown Los Angeles and Burbank. Within Glendale, Line 92 travels via Brand Boulevard and Glenoaks Boulevard. Line 92 operates 24 hours a day.

Line 92 serves the communities of Burbank, Glendale, Atwater Village, Silver Lake, Echo Park and downtown Los Angeles. Service is very frequent within peak periods (every 10 minutes). Line 92 operates every 25 minutes in the midday. On weekends, the prevailing headway is 30 minutes. After 9 p.m., hourly service is provided.

Line 92 shares Brand Boulevard with Beeline Routes 1 and 2, and operates with Beeline Route 7 along Glenoaks Boulevard between Pacific Avenue and Alameda Avenue.

Transfers between Line 92 and Beeline Routes take place at the following locations:

- Routes 1 and 2: stops along Brand between Los Feliz and Glenoaks and Central & Glenoaks;
- Route 3: Brand & Broadway;
- Route 4: Brand & Chevy Chase and Brand & Broadway;
- Route 5: Glenoaks & Pacific;
- Route 6: Brand & Colorado;
- Route 7: Brand & Glenoaks and stops along Glenoaks between Alameda and Pacific;
- Route 13: Brand & Broadway.

Weekday ridership on Line 92 within the Beeline service area is summarized in Table 6.6. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, northbound boardings and alightings at Glenoaks & Pacific are counted in the Glenoaks & Pacific – Glenoaks & Alameda segment and southbound boardings and alightings at Glenoaks & Pacific are counted in the Brand & San Fernando – Glenoaks & Pacific segment. The segment with the most passenger activity is Brand & San Fernando – Glenoaks & Pacific, where Beeline Routes 1 and 2 overlap Line 92, followed by the segment along Glenoaks where Beeline Route 7 operates along with Line 92. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings. This is most obvious in the segment along Glenoaks Boulevard; along Brand, boardings and alightings are close to even.

Table 6.6
Metro Line 92 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	1,161	1,497	1,417	1,115
Brand & San Fernando – Glenoaks & Pacific	936	904	981	951
Glenoaks & Pacific – Glenoaks & Alameda	225	593	436	164

Source: Metro ridership counts, October – December 2008

Table 6.7 indicates major stops (defined as over 100 boardings or alightings in one direction) on Line 92 within the Beeline service area. Brand & Broadway and Glenoaks & Pacific are busy stops in both directions, while Brand & Harvard is an active northbound stop.

Table 6.7
Major Stops on Metro Line 92 within the Beeline Service Area

Stop	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Brand & Broadway	341	155	287	332
Glenoaks & Pacific	72	150	121	62
Brand & Harvard	85	150	--	--

Source: Metro ridership counts, October – December 2008

Line 92 is one of two 24-hour Metro lines serving Glendale. It provides frequent service during peak periods. Within Glendale, it provides a regional connection along with serving internal trips on Brand Boulevard and Glenoaks Boulevard. Ridership along Brand is strong. The overlap with Routes 1 and 2 is not duplicative – ridership is very high along Brand, and Metro and Beeline routes serve different markets, although there is some overlap. The situation is less clear along Glenoaks with Route 7. Ridership is lower on the Glenoaks corridor and different headways result in the two routes sometimes running virtually on top of each other.

Lines 94/794 Los Angeles – Sun Valley via San Fernando Road

Metro Lines 94/794 operates between downtown Los Angeles and Sylmar. Line 94 is the local route, while Line 794 is one of two Metro Rapid lines serving Glendale. Both lines travel via San Fernando Road, though at the time of the ridecheck Line 794 had three stops along Brand Boulevard before turning west and returning to San Fernando Road. Line 94 operates from early in the morning until after 1:00 a.m. The last Line 794 trip makes a stop in Glendale at 8:38 p.m. on weekdays and at approximately 8:00 p.m. on weekends.

Lines 94/794 serve the communities of Sylmar, San Fernando, Pacoima, Sun Valley, Burbank, Glendale, Glassell Park, Lincoln Heights, Cypress Park, and downtown Los Angeles. Line 794 stops in Glendale are on San Fernando Road at Los Feliz, Pacific, Broadway, Grandview, and Sonora. Service is very frequent within peak periods (every 10 to 12 minutes on each line, with a combined frequency of five to six minutes at Metro Rapid stops). Line 94 operates every 30 minutes in the midday, while Line 794 runs every 24 minutes. On Saturday, Line 94 is every 24 minutes while Line 794 is every 30 minutes, and on Sunday the prevailing frequency on each route is 30 minutes.

There are no local Beeline routes operating with Lines 94/794 along San Fernando Road. Route 12 travels via San Fernando Road during its peak period service, but its orientation is the Metrolink stations at either end of its route, which are not directly served by Lines 94/794.

Transfers between Lines 94/794 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Central/San Fernando & Los Feliz;
- Route 6: San Fernando & Riverdale (Line 94 only);
- Route 7: San Fernando & Western or Alameda (Line 94 only).

Weekday ridership on Line 94 within the Beeline service area is summarized in Table 6.8. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, northbound boardings and alightings at San Fernando & Los Feliz are counted in the San Fernando & Los Feliz –San Fernando & Pacific segment and southbound boardings and alightings at San Fernando & Los Feliz are counted in the San Fernando & Rosslyn/Tyburn –San Fernando & Los Feliz segment. Northbound, the segment with the most passenger activity is San Fernando & Los Feliz – San Fernando & Pacific. The busiest southbound segment is San Fernando & Rosslyn/Tyburn –San Fernando & Los Feliz. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings. However, in the segments beginning at Los Feliz (segment 2 northbound and segment 1 southbound), this pattern reverses, suggesting that downtown Glendale is an important destination.

Table 6.8
Metro Line 94 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	1,074	1,192	1,064	965
San Fernando & Rosslyn/Tyburn – San Fernando & Los Feliz	157	170	354	407
San Fernando & Los Feliz – San Fernando & Pacific	421	299	206	204
San Fernando & Pacific – San Fernando & Broadway	190	223	154	112
San Fernando & Broadway – San Fernando & Sonora	133	256	244	154
San Fernando & Sonora – San Fernando & Allen	174	244	106	88

Source: Metro ridership counts, October – December 2008

Table 6.9 shows activity at Metro Rapid Line 794 stops within Glendale. As noted earlier, Line 794 was recently shifted from Brand Boulevard to San Fernando Road in Glendale, so the Brand stops are no longer used by Line 794. The stop at Brand & Broadway was by far the busiest stop within Glendale. Passengers traveling to this location must now transfer at San Fernando & Los Feliz to and from Beeline Routes 1 and 2.

Table 6.9
Stops on Metro Rapid Line 794 within the Beeline Service Area

Stop	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
All Stops	450	894	800	492
San Fernando & Brand	36	112	69	39
Brand & Chevy Chase	58	122	98	57
Brand & Broadway	264	355	295	284
Brand & Milford	45	141	140	64
San Fernando & Grandview	10	54	51	10
San Fernando & Sonora	37	111	148	37

Source: Metro ridership counts, October – December 2008

Table 6.10 indicates major stops (defined as over 100 boardings or alightings in one direction) on Line 94 within the Beeline service area. San Fernando & Los Feliz is by far the most active stop in Glendale; this is the transfer point for Line 94 passengers traveling to downtown Glendale. Other busy stops are at Pacific, Sonora, and Broadway.

Table 6.10
Major Stops on Metro Line 94 within the Beeline Service Area

Stop	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
San Fernando & Los Feliz	352	208	221	305
San Fernando & Pacific	154	121	114	118
San Fernando & Sonora	81	122	121	85
San Fernando & Broadway	64	101	97	58

Source: Metro ridership counts, October – December 2008

Lines 94/794 are a combination of a local and a Metro Rapid line along San Fernando, one of two Metro Rapid lines serving Glendale. Service is frequent during peak periods. Within Glendale, the most important stop is San Fernando & Los Feliz, where passengers traveling to and from downtown Glendale have transfer connections with Beeline Routes 1 and 2. This stop is even more important now that Metro Rapid Line 794 has been rerouted to remain on San Fernando Road instead of traveling to the heart of downtown Glendale via Brand.

Lines 94/794 provide service on San Fernando Road, a corridor served only by Beeline Route 12, which operates only in peak periods and is designed for a different purpose (to meet Metrolink trains at the Glendale and Burbank stations). The rerouting of Metro Rapid Line 794 increases the importance of Beeline routes providing connections to and from San Fernando Road.

Line 96 Los Angeles –Sherman Oaks via Griffith Park Dr & Riverside Dr

Metro Line 96 operates between downtown Los Angeles and Sherman Oaks. Line 96 travels in Glendale for only a short stretch of Victory Boulevard in the northwest part of the City. Although the Line 96 map does not show it, the ridecheck indicates that the line deviates north to serve a stop at Western & Lake. Line 96 operates from early in the morning until approximately 8:45 p.m. seven days a week.

Line 96 serves the communities of Sherman Oaks, Valley Village, Studio City, Universal City, North Hollywood, Toluca Lake, Burbank, Glendale, Griffith Park, Silver Lake, and downtown Los Angeles. Service is every 20 minutes in peak periods, every 30 minutes in the midday and on Saturday, and every 45 minutes on Sunday.

Line 96 shares Victory Boulevard with Beeline Route 7 on its turnaround loop between Sonora and Western. The only transfer between Line 96 and a Beeline Route is with Route 7 at Victory & Western.

Weekday ridership on Line 96 within the Beeline service area is summarized in Table 6.11. The predominant direction of travel from the Glendale area is southbound toward downtown Los Angeles, as shown by a higher number of southbound boardings and northbound alightings.

Table 6.11
Metro Line 96 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Victory & Sonoma – Victory & Allen	39	88	86	38

Source: Metro ridership counts, October – December 2008

There are no stops with over 40 boardings or alightings in one direction on Line 96 within the Beeline service area. The most active northbound stop is Victory & Western, with 21 boardings and 40 alightings, while the most active southbound stop is Western & Lake, with 39 boardings and 11 alightings.

Only a small segment of Line 96 is within Glendale, and this route is not a central part of the Glendale transit network. Its most important role lies in its connection with Beeline Route 7.

Line 177 La Cañada – Sierra Madre Villa via I-210 and California Boulevard and Walnut Street

Metro Line 177 operates between JPL in La Cañada Flintridge and Pasadena. Within La Cañada Flintridge, Line 177 travels via Oak Grove Drive and Berkshire Place, then proceeds to Pasadena via I-210. Line 177 operates weekdays only between 6:00 a.m. and 7:00 p.m.

Line 177 serves the communities of La Cañada Flintridge and Pasadena. This route stops at three Metro Gold Line stations in Pasadena: Del Mar, Allen, and Sierra Madre Villa. Line 177 operates every 30 minutes. Several years ago, the Glendale Beeline assumed operation of the portion of the former Line 177 between downtown Glendale and JPL. Metro contributes to the cost of the extended Beeline Route 3. The only transfer between Line 177 and a Beeline Route is with Route 3 at JPL.

No ridership data is available for Line 177. The most important role for this route in the Glendale area is to provide a direct connection between the Metro Gold Line Del Mar Station and JPL.

Line 180/181 Pasadena – Hollywood via Colorado Boulevard and Hollywood Boulevard

Metro Line 180/181 operates between Pasadena and Hollywood. Within Glendale, Line 180/181 travels via Broadway, Central Avenue, and Los Feliz Boulevard. Line 180/181 operates 24 hours a day.

Line 180/181 serves the communities of Pasadena, Eagle Rock, Glendale, and Hollywood. The two lines diverge in Pasadena, with Line 180 traveling north via Lake Avenue to Altadena and Line 181 continuing east via Colorado Boulevard to the Sierra Madre Gold Line station. Service is very frequent within peak periods (every 12 minutes) and in the midday (every 15 minutes). On weekends, the prevailing headway is 15 minutes. After 11 p.m., hourly service is provided all night.

Line 180/181 shares a portion of Broadway (between Brand Boulevard and Glendale Avenue) with Beeline Route 3 and another portion of Broadway between Glendale and Chevy Chase with Beeline Route 4. Line 180/181 operates with Beeline Routes 1 and 2 along Central Avenue south of Broadway.

Transfers between Line 180/181 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Brand & Broadway and stops along Central Avenue between Broadway and Los Feliz;
- Route 3: Broadway & Glendale and Brand & Broadway;
- Route 4: Broadway & Chevy Chase, Broadway & Glendale, Broadway & Brand, Central & Broadway, Central & Colorado;
- Route 5: Central & Colorado;
- Route 6: Central & Colorado, Broadway & Verdugo, and Broadway & Sinclair;
- Route 13: Broadway & Glendale and Brand & Broadway.

Weekday ridership on Line 180/181 within the Beeline service area is summarized in Table 6.12. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, eastbound boardings and alightings at Central & Broadway are counted in the Central & Broadway – Broadway & Eagledale segment and westbound boardings and alightings at Central & Broadway are counted in the Los Feliz & San Fernando – Central & Broadway segment. The segment with the most passenger activity is along Broadway between Central and Eagledale. The predominant direction of travel from the Glendale area is westbound toward Hollywood, as shown by a higher number of westbound boardings and eastbound alightings. This is most obvious in the segment between Los Feliz & San Fernando and Central & Broadway; along Broadway, boardings and alightings are almost even.

Table 6.12
Metro Line 180/181 Weekday Ridership within the Beeline Service Area

Line Segment	Eastbound		Westbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	1,478	1,649	1,859	1.551
Los Feliz & San Fernando – Central & Broadway	562	766	975	665
Central & Broadway – Broadway & Eagledale	916	883	884	886

Source: Metro ridership counts, October – December 2008

Table 6.13 indicates major stops (defined as over 100 boardings or alightings in one direction) on Line 180/181 within the Beeline service area. Broadway & Brand, Broadway & Glendale, and Central & Los Feliz are the busiest stops in Glendale on Line 180/181.

Table 6.13
Major Stops on Metro Line 180/181 within the Beeline Service Area

Stop	Eastbound		Westbound	
	Boardings	Alightings	Boardings	Alightings
Broadway & Brand	209	100	230	214
Broadway & Glendale	161	167	205	164
Central & Los Feliz	98	46	255	202
Broadway & Maryland	187	85	41	214
Broadway & Central	121	120	131	128
Central & Colorado	55	179	163	35
Central & Americana	58	88	208	68
Los Feliz & San Fernando	142	232	18	11
Broadway & Verdugo	60	103	134	49

Source: Metro ridership counts, October – December 2008

Line 180/181 is one of the most frequent Metro services within Glendale. It provides a regional connection east to Pasadena and south to Hollywood along with serving internal trips on Broadway and Central Avenue. The overlap with various Beeline routes along Broadway and Central Avenue does not appear to be duplicative – Metro and Beeline routes serve different markets, although there is some overlap.

Line 183 Sherman Oaks – Glendale Transportation Center via Magnolia Boulevard, Glendale Galleria, and Chevy Chase Drive

Metro Line 183 operates between Sherman Oaks and the GTC in Glendale. Within Glendale, Line 183 takes a circuitous route via San Fernando Road, Doran Street, Pacific Avenue, Broadway, Brand Boulevard, Colorado Street, Verdugo Road, Acacia Avenue, Chevy Chase Drive, and Central Avenue. In Glendale, Line 183 operates weekdays only from approximately 5:00 a.m. to 7:00 p.m. Line 183 does operate on weekends, but only as far east as Burbank.

Line 183 serves the communities of Sherman Oaks, Van Nuys, Studio City, Valley Glen, North Hollywood, Universal City, Burbank, and Glendale. Service in Glendale is infrequent, with a 60-minute headway all day.

Line 183 shares Pacific Avenue between Doran Street and Broadway with Beeline Route 5, Colorado Street between Brand Boulevard and Verdugo Road with Beeline Route 6, Chevy Chase Drive between Acacia and Brand with Beeline Route 4, and Central Avenue south of Chevy Chase with Beeline Routes 1 and 2.

Transfers between Line 183 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Broadway & Central, Broadway & Brand, Colorado & Brand, Chevy Chase & Brand, Chevy Chase & Central, Glendale Transportation Center;
- Route 3: Brand & Broadway;
- Route 4: Broadway & Central, Colorado & Brand, Colorado & Chevy Chase, and Acacia & Chevy Chase, Chevy Chase & Brand;
- Route 5: Pacific & Doran, Pacific & Broadway;
- Route 6: Brand & Colorado, Colorado & Verdugo;
- Route 7: San Fernando & Alameda and San Fernando & Western;
- Route 13: Brand & Broadway.

Weekday ridership on Line 183 within the Beeline service area is summarized in Table 6.14. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, eastbound boardings and alightings at Doran & San Fernando are counted in the Doran & San Fernando – Pacific & Doran segment and westbound boardings and alightings at Doran & San Fernando are counted in the San Fernando & Allen – Doran & San Fernando segment. The segment with the most passenger activity is Broadway & Pacific – Colorado & Brand, a segment that includes the heart of downtown Glendale. The predominant direction of travel from the Glendale area is westbound toward Sherman Oaks, as shown by a higher number of westbound boardings and eastbound alightings.

Table 6.14
Metro Line 183 Weekday Ridership within the Beeline Service Area

Line Segment	Eastbound		Westbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	165	312	362	177
San Fernando & Allen – Doran & San Fernando	47	25	32	51
Doran & San Fernando – Pacific & Doran	15	5	21	29
Pacific & Doran – Broadway & Pacific	25	19	14	22
Broadway & Pacific – Colorado & Brand	24	88	104	31
Colorado & Brand – Verdugo & Colorado	23	70	86	21
Verdugo & Colorado – Chevy Chase & Acacia	11	40	26	9
Chevy Chase & Acacia – Central & Chevy Chase	15	34	50	13
Central & Chevy Chase – GTC	5	31	30	2

Source: Metro ridership counts, October – December 2008

There are no stops with over 60 boardings or alightings in one direction on Line 183 within the Beeline service area. The most active stop is Broadway & Brand, with 59 boardings and 18 alightings westbound and 10 boardings and 49 alightings eastbound.

Line 183 is a Metro route, but functions more as a community circulator within Glendale. It provides frequent service during peak periods. Route 183 overlaps several Beeline routes, but never for long enough to qualify as duplicative. Within Glendale, it provides a one-seat connection between the San Fernando Road area in the western portion of the City and downtown Glendale.

Line 201 Glendale – Koreatown via Silver Lake Boulevard

Metro Line 201 operates between the Glendale Adventist Medical Center at Chevy Chase & Glenoaks and Koreatown in Los Angeles. Within Glendale, Line 201 travels via Chevy Chase Drive, Broadway, Pacific Avenue, and San Fernando Road. Line 201 operates seven days a week between approximately 5:30 a.m. (7:00 a.m. weekends) and 7:30 p.m. in Glendale

Line 201 serves the communities of Glendale, Atwater Village, Silver Lake, Westlake, and Koreatown. Line 201 operates every 40 minutes on weekdays and every 60 minutes on weekends.

Line 201 shares Chevy Chase Drive between Glenoaks Boulevard and California Avenue with Beeline Route 13, Broadway between Chevy Chase Drive and Glendale Avenue with Beeline Route 4, and Broadway between Glendale Avenue and Brand Boulevard with Route 3. Line 201 operates with Beeline Route 5 along Pacific Avenue between Broadway and Riverdale Avenue.

Transfers between Line 201 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Broadway & Central and Broadway & Brand;
- Route 3: Broadway & Glendale and Broadway & Brand;
- Route 4: Broadway & Chevy Chase and Broadway & Central;
- Route 5: Pacific & Broadway and Pacific & Riverside;
- Route 6: Pacific & Colorado and Pacific & Riverside;
- Route 13: Broadway & Brand

Weekday ridership on Line 201 within the Beeline service area is summarized in Table 6.15. Each route segment includes boardings and alightings at the first stop but not at the last stop of the segment, by direction. For example, eastbound boardings and alightings at Doran & San Fernando are counted in the Doran & San Fernando – Pacific & Doran segment and westbound boardings and alightings at Doran & San Fernando are counted in the San Fernando & Allen – Doran & San Fernando segment. The segment with the most passenger activity is Broadway & Pacific – Colorado & Brand, a segment that includes the heart of downtown Glendale. The predominant direction of travel from the Glendale area is westbound toward Sherman Oaks, as shown by a higher number of westbound boardings and eastbound alightings.

Table 6.15
Metro Line 201 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
All Segments	118	288	290	131
San Fernando & Chevy Chase – Broadway & Pacific	29	27	49	41
Broadway & Pacific – Chevy Chase & Broadway	74	146	125	78
Chevy Chase & Broadway – Chevy Chase & Glenoaks	15	115	116	13

Source: Metro ridership counts, October – December 2008

There are no stops with over 60 boardings or alightings in one direction on Line 201 within the Beeline service area. The most active stop northbound is Broadway & Maryland, with 29 boardings and 49 alightings. The most active stop southbound is Broadway & Brand, with 45 boardings and 21 alightings.

The most important role for this route within Glendale is to serve Glendale Adventist Medical Center. Regionally, Line 201 provides a connection from Glendale to Silver Lake and the Vermont corridor in Los Angeles.

Line 268 La Cañada – Sierra Madre Villa via I-210 and California Boulevard and Walnut Street

Metro Line 268 operates between JPL in La Cañada Flintridge and El Monte. Within La Cañada Flintridge, Line 268 travels via Oak Grove Drive. Line 268 serves JPL during peak periods only on weekdays, between 6:30 to 8:30 a.m. and between 3:00 and 8:15 p.m. On weekends, Line 268 operates between 8:25 a.m. and 7:25 p.m., with all trips serving JPL.

Line 268 serves the communities of La Cañada Flintridge, Altadena, Pasadena, Sierra Madre, Arcadia, and El Monte. This route connects with the Metro Gold Line at the Sierra Madre Villa station in Pasadena. Line 268 operates every 30 minutes during peak periods on weekdays and every 60 minutes on weekends. The only transfer between Line 268 and a Beeline Route is with Route 3 at JPL.

No ridership data is available for Line 268. The most important role for this route in the Glendale area is to provide a connection between JPL and Pasadena and communities to the east.

Line 603 Rampart Boulevard – Hoover Street – Colorado Street

Metro Line 603 operates between the Grand Station of the Blue Line at Grand Avenue & Washington Boulevard in Los Angeles to the Glendale Galleria. Within Glendale, Line 603 travels via San Fernando Road, Pacific Avenue, and Colorado Street. Line 603 operates seven days a week between approximately 5:00 a.m. (6:00 a.m. weekends) and 11:00 p.m. in Glendale.

Line 603 serves the communities of Glendale, Silver Lake, Echo Park, Westlake, and Pico-Union. Service is frequent on this route. Line 603 operates every 10 minutes in peak periods

on weekdays and 12 minutes in the midday. On Saturday and Sunday, the prevailing headway is 20 minutes.

Line 603 shares Pacific Avenue between Riverdale Avenue and Colorado Street with Beeline Route 5, Colorado Street between Pacific Avenue and Brand Boulevard with Beeline Route 6.

Transfers between Line 603 and Beeline Routes take place at the following locations:

- Routes 1 and 2: San Fernando & Los Feliz and Colorado & Central;
- Route 4: Colorado & Central;
- Route 5: Pacific & Riverside and Colorado & Central;
- Route 6: Pacific & Riverside, Pacific & Colorado, and Colorado & Central;

No ridership data is available for Line 603. The most important role for this route in Glendale is to connect riders from south of the City with downtown Glendale. Regionally, Line 603 provides a connection from Glendale to the Metro Red Line at Westlake/MacArthur Park and the Metro Blue Line at Grand.

Line 685 Glendale – Glassell Park via Verdugo Road

Metro Line 685 operates between GCC and Cypress & Verdugo in Glassell Park. Within Glendale, Line 685 travels via Verdugo Road between GCC and the southern city limit. Line 685 operates weekdays only between approximately 6:00 a.m. and 9:00 p.m. in Glendale.

Line 685 serves the communities of Glendale, Eagle Rock, and Glassell Park. Line 685 operates every 30 minutes on weekdays.

Line 685 shares Verdugo Road between GCC and Glendale Avenue with Beeline Routes 3 and 7. South of Glendale Avenue, Line 685 is the only transit service along Verdugo Road except for a brief portion of the turnaround loop for Beeline Route 6.

Transfers between Line 685 and Beeline Routes take place at the following locations:

- Route 3: GCC and Verdugo & Glendale;
- Route 6: Verdugo & Colorado;
- Route 7: GCC and Verdugo & Glendale;
- Route 13: Verdugo & Chevy Chase.

Weekday ridership on Line 685 within the Beeline service area is summarized in Table 6.16. The predominant direction of travel from the Glendale area is southbound toward Glassell Park, as shown by a higher number of southbound boardings and northbound alightings.

Table 6.16
Metro Line 685 Weekday Ridership within the Beeline Service Area

Line Segment	Northbound		Southbound	
	Boardings	Alightings	Boardings	Alightings
Verdugo & Acacia – GCC	174	380	261	93

Source: Metro ridership counts, October – December 2008

There is only one major stop (defined as over 100 boardings or alightings in one direction) on Line 685 within the Beeline service area. The northbound stop at Cañada & Glendale College has 49 boardings and 114 alightings. The stops at Verdugo & Towne (GCC) and Verdugo & Broadway are the busiest southbound stops with 60 boardings at each stop.

The most important role for this route in Glendale is to connect riders from the Verdugo corridor with GCC.

Line 780 Metro Rapid Pasadena – West Los Angeles via Colorado Boulevard and Hollywood Boulevard

Metro Rapid Line 780 operates between Pasadena City College at Colorado & Hill in Pasadena and the West Los Angeles Transit Center at Hollywood & Highland in West Los Angeles. Within Glendale, Line 780 travels via Broadway, Central Avenue, and Los Feliz Boulevard. Line 780 operates seven days a week in Glendale between approximately 5:30 a.m. and 8:15 p.m. on weekdays and 7:15 a.m. and 6:30 p.m. on weekends.

Line 780 serves the communities of Pasadena, Eagle Rock, Glendale, Los Feliz, and Hollywood. Line 780 operates every eight to 12 minutes in peak periods on weekdays and every 15 minutes at most other times.

Line 780 Broadway between Chevy Chase Drive and Glendale Avenue with Beeline Route 4, and Broadway between Glendale Avenue and Brand Boulevard with Route 3. Line 780 and Beeline Routes 1 and 2 operate on Central Avenue south of Broadway. As a Metro Rapid route, Line 780 does not duplicate Beeline routes because of the express, regional nature of the Metro Rapid routes.

Transfers between Line 780 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Broadway & Brand, Central & Colorado, and Los Feliz & San Fernando;
- Route 3: Broadway & Glendale and Broadway & Brand;
- Route 4: Broadway & Glendale, Broadway & Brand, and Central & Colorado;
- Route 5: Central & Colorado
- Route 6: Broadway & Verdugo and Central & Colorado;
- Route 13: Broadway & Glendale and Broadway & Brand.

Table 6.17 shows activity at Metro Rapid Line 780 stops within Glendale. The stop at Brand & Broadway is the busiest stop within Glendale. Central & Colorado and Los Feliz & San Fernando have over 300 alightings eastbound.

Table 6.17
Stops on Metro Rapid Line 780 within the Beeline Service Area

Stop	Eastbound		Westbound	
	Boardings	Alightings	Boardings	Alightings
All Stops	834	1,557	1,300	796
Los Feliz & San Fernando	145	348	247	112
Central & Los Feliz	22	24	56	34
Central & Colorado	64	376	255	68
Broadway & Brand	376	382	303	366
Broadway & Glendale	158	260	261	159
Broadway & Verdugo	70	168	178	58

Source: Metro ridership counts, October – December 2008

The most important role for this Metro Rapid route is to provide fast connections between Glendale and Pasadena to the east and Los Feliz, Hollywood, and West Los Angeles to the south and west.

6.2 Other Transit Routes Operating within the Beeline Service Area

Two Los Angeles Department of Transportation (LADOT) commuter express routes stop in the Glendale area and one Pasadena ARTS local route serves JPL. There is also a connection between Beeline Route 12 and two Burbank Bus routes at the Burbank Regional Intermodal Transit Center.[2] However, all three of these routes are designed as connectors between Metrolink and employment sites within Burbank, so transfer opportunities are restricted.

LADOT Commuter Express 409 Sylmar/Lake View Terrace/Sunland/Tujunga/Montrose/ East Glendale/Downtown Los Angeles

LADOT Commuter Express 409 operates express service to downtown Los Angeles in the morning peak and from downtown Los Angeles in the afternoon peak. Line 409 has seven morning trips and seven afternoon trips. Stops on Line 409 within the Beeline service area include:

- Foothill Boulevard & Lowell Avenue
- Honolulu Avenue & Lowell Avenue (park-and-ride)
- Montrose Avenue & Ocean View Boulevard
- Montrose Avenue & Florencita Avenue
- Verdugo Boulevard & Vahili Way (park-and-ride)
- Holly Drive & Harvey Drive
- Broadway & Harvey Drive (park-and-ride)
- Colorado Street & Eagledale Avenue

After the Colorado & Eagledale stop, Line 409 operates non-stop to downtown Los Angeles. Travel times between Foothill & Lowell and 7th & Flower in downtown Los Angeles vary between 40 and 55 minutes. Travel times between Broadway & Holly and 7th & Flower vary between 26 and 39 minutes.

[2] Route 12 also connects with the Downtown Burbank Loop, but Burbank Bus is discontinuing this route effective August 17, 2009.

Transfers between Line 409 and Beeline Routes take place at the following locations:

- Route 3: Honolulu & Verdugo (one block from Montrose & Florencita);
- Route 6: Broadway & Harvey.

No ridership data is available for Line 409. This route provides express service between downtown Los Angeles and far north Glendale, Montrose, and Glendale.

LADOT Commuter Express 549 San Fernando Valley/Burbank Media District/Glendale/ Pasadena

LADOT Commuter Express 549 operates east-west express service across the San Fernando Valley between the Encino park-and-ride and the Lake Metro Gold Line station in Pasadena. Line 549 has five morning trips and five afternoon trips in each direction. Line 549 travels via SR 134 and has two stops in Glendale:

- Brand Boulevard & Sanchez Drive (EB)/Goode Avenue (WB)
- Broadway & Harvey Drive (park-and-ride)

After the Colorado & Eagledale stop, Line 549 operates non-stop to downtown Los Angeles. Travel times between Encino and Brand Boulevard vary between 37 and 53 minutes. Travel times between Alameda & Pass in Burbank and Brand Boulevard vary between nine and 15 minutes. Travel times between Walnut & Garfield in Pasadena and Brand Boulevard vary between nine and 16 minutes.

Transfers between Line 549 and Beeline Routes take place at the following locations:

- Routes 1 and 2: Brand & Goode/Sanchez
- Route 6: Broadway & Harvey.

No ridership data is available for Line 549. This route provides express service connecting communities in the San Fernando Valley, Burbank, Glendale, and Pasadena.

Pasadena ARTS Route 52 Old Pasadena – Linda Vista Art Center North Campus/JPL

Pasadena ARTS Route 52 operates during peak periods only between Old Pasadena and JPL. This route is a variant of all-day service on Route 51, with a deviation via Linda Vista Avenue and Oak Grove Drive to serve JPL. There are three morning trips (one of which begins at JPL) and four afternoon trips. The only transfer between Route 52 and a Beeline route is with Route 3 at JPL.

No ridership data is available for Pasadena ARTS Route 52. Given limited service times and limited connectivity, this route does not play a critical role in providing mobility within the Beeline service area.

6.3 Issues and Opportunities for Enhanced Regional Service Coordination

There are two key issues in terms of enhancing regional service coordination:

- Providing connections between Beeline routes and regional transit lines
- Avoiding duplication of service

Connections

The City of Glendale is in a transit-rich environment, as shown by the extensive number of Metro and other routes that serve the City. Table 6.18 summarizes transfer opportunities between regional and Beeline routes.

Routes 11 and 12 are not included in Table 6.18 because their primary function is to connect with Metrolink trains. To ensure connections, morning departures are scheduled two minutes after train arrival and afternoon arrivals are scheduled seven minutes prior to train departure.

Beeline riders have plentiful connections to and from regional transit services. In many cases, given the extent of the transit network in Glendale, riders can board the regional route directly. In other cases, the Beeline provides local circulation for the regional routes. This is a typical and appropriate role for a municipal transit system in relation to a regional transit system such as Metro.

Table 6.18
Transfer Opportunities between Beeline and Other Routes

Metro and Other Lines	Beeline Local Routes						
	1 and 2	3	4	5	6	7	13
81					+		
84					+		
90/91		+	+		+	+	+
92	+	+	+	+	+	+	+
94	+				+	+	
96						+	
177		+					
180/181	+	+	+	+	+		+
183	+	+	+	+	+	+	+
201	+	+	+	+	+		+
268		+					
603	+		+	+	+		
685		+			+	+	+
Metro Rapid 780	+	+	+	+	+		+
Metro Rapid 794	+						
LADOT 409		+			+		
LADOT 549	+				+		
Pasadena Arts 52		+					

A final issue regarding connectivity is the timing of the connections. The ideal situation from the customer's perspective is that when he or she gets off the first bus, the transferring bus is waiting. In the real world, this does not always happen even with scheduled meets.

Timing of transfers is complicated by the volume of connecting routes and the variety of headways operated throughout the day. Even a relatively simple situation can be challenging. Table 6.19 shows arriving and departing buses at JPL in the morning peak. Route 3 buses that serve La Cañada Flintridge are indicated by "LCF" after their times; the other buses go to Glendale. For this example, we assume that the ideal "window" for a transfer connection is two to five minutes. All connections to and from the Beeline Route 3 that fall within this window are highlighted in bold in Table 6.19.

Table 6.19
Connections at JPL in the Morning Peak Period

Beeline Route 3 Arrives	Line 177 Leaves	Line 268 Leaves	Route 52 Leaves		Route 52 Arrives	Line 268 Arrives	Line 177 Arrives	Beeline Route 3 Leaves
	6:01		6:13					5:45
6:22	6:31	6:36					5:55	
6:39					6:13		**6:20**	6:23
6:59	**7:01**	7:11				6:30		6:40
7:14 LCF						7:00	**6:55**	7:00
7:19	7:31	7:31	7:30					7:15 LCF
7:39								7:20
7:46 LCF					7:30	7:31	7:25	7:40
7:59	**8:01**	8:09						7:47 LCF
8:18 LCF						8:00	**7:55**	8:00
8:19	8:31							8:19 LCF
8:39		8:39						8:20
8:59	**9:01**				**8:37**	8:30	8:25	8:40
							8:55	**9:00**

Note: Bold indicates a transfer connection within the desired two-to-five minute window.

With one exception, the only Beeline connections that are within the two-to-five minute window are the top of the hour connections between Route 3 and Line 177 in either direction. The other good connection is from the 8:37 Pasadena ARTS Route 52 and the 8:40 Route 3. The Line 268 arrivals at 7:00 and 8:00 appear to offer a perfect connection with Route 3, but it is too tight: if Line 268 arrives even one minute late, the transfer is missed.

What is so hard about scheduling transfers? The Route 3 – Line 177 transfer offers one answer. The headways are different: the Route 3 buses to and from Glendale have a 20-minute headway while Line 177 operates on a 30-minute headway. Once every hour, a good connection is scheduled, but good connections cannot happen more often given the headways.

Another answer derives from the sheer number of intersecting routes that offer transfer possibilities to any given route. Another transfer opportunity on a route may be more important than the transfer at JPL. For example, Route 52 might be timed to meet other Pasadena ARTS buses in Pasadena, and that transfer might be more important than the transfer at JPL.

A third concern is operational in nature. JPL is a relatively simple example – imagine if we decided to have all buses stopping at Brand & Broadway to meet at the top of every hour. The sheer volume of buses and passenger movements from bus to bus could bring traffic to a halt.

A hierarchy of transfers by importance is essential to any timed-transfer scheme. For Beeline local routes, the most important regional connections are to the Metro Rapid lines (Line 780 and

794). Fortunately, these lines operate frequently, a fact that reduces the need to schedule transfer activity closely. Wherever possible, however, Beeline routes should be scheduled to provide convenient transfers (in the sense of a two-to-five minute window) whenever possible.

Duplication

A second and equally important element of service coordination is duplication of service. It is generally not accepted practice to add a route to a corridor that already has transit service.

Does this mean that two routes should never run on the same street? Three examples will help to answer this question.

The first example is service to GCC, a major trip generator. GCC is served by Beeline Routes 3 and 7 and by Metro Lines 685 and 90/91. The Beeline routes and Line 90/91 all operate along Glendale Avenue between Glenoaks and GCC. Is this duplicative service?

The answer is no, and the reason is that these routes serve different areas: downtown Glendale on Route 3; west Glendale on Route 7; South Glendale Avenue and points south on Line 90/91, and the Verdugo Road corridor on Line 685. As transit routes approach a major trip generator, they will often operate over a single street. The routes overlap on a map, but this is not service duplication.

The second example is service along Brand Boulevard and Central Avenue. Beeline Routes 1 and 2 share Brand between Los Feliz and Glenoaks with Metro Line 92 and Central between Los Feliz and Broadway with Metro Lines 180/181 and 780.

This is not really duplication either. Brand & Broadway is such a key transit node in the center of downtown Glendale that it is logical that both Beeline and Metro routes serve this location directly. The passenger activity at key stops along both Brand and Central reinforce the importance of operating on these streets. The Metro lines, particularly Metro Rapid Line 780, provide regional connections to and from downtown Glendale, while the Beeline Routes 1 and 2 serve shorter trips.

The third example is service along Glenoaks Boulevard between Alameda Avenue and Pacific Avenue. Beeline Route 7 and Metro Line 92 provide service on this segment. As indicated by ridership numbers, Glenoaks is not a strong transit corridor. Should two routes be serving Glenoaks?

This is a harder example to decide than the others. It is true that the Metro line serves regional trips while Route 7 meets local travel needs. Yet Glenoaks does not seem to generate sufficient demand to justify two routes.

An important factor regarding Route 7 is that its primary ridership is school-related, to Hoover High School and GCC. Neither of these trip generators is served by Line 92, so without Route 7 riders would be forced to transfer to already overcrowded (at bell times) Beeline Route 5 at Pacific and Route 3 in downtown. Route 7 is needed in west Glendale. Could it operate more effectively on another street? This issue is considered in the identification and evaluation of alternatives for this route.

The foregoing suggests that apparent duplication of service is acceptable in the vicinity of major trip generators or along dense transit corridors with both regional and local demand. Duplication along a corridor may also be acceptable if the routes serve different destinations.

Another issue regarding duplication concerns proposals for new Beeline service in corridors already served by Metro. South Glendale Avenue, Verdugo Road, and San Fernando Road are corridors within Glendale with Metro service but no Beeline service. How should the City respond to requests for new Beeline routes in these circumstances?

If funding were unlimited, an easy answer would be to put the service out on the street and see what happens. Today's fiscal environment precludes this approach. In fact, it is difficult to justify investing in new Beeline service on top of existing Metro service in the current situation with scarce resources available for transit.

A more logical approach is for Beeline and Metro staff to continue to work together on issues of regional coordination. Prop A and Prop C funds are made available to Cities with the requirement that new services be compatible with existing bus service. Regional dollars spent throughout Los Angeles County are intended to create coordinated rather than redundant transit services.

Finally, it was noted earlier in this chapter that some Metro lines in Glendale, particularly Line 183, function more as community circulators than as regional routes. In certain circumstances, it may make sense to transfer operation of a route from Metro to the Beeline, as was done with a segment of Line 177 that is now Beeline Route 3. Beeline and Metro staff should explore all options to rationalize transit services in Glendale.

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Glendale Beeline
2009 Line-by-Line Analysis
Chapter 7: Latent and Future Demand Estimation

7.0 Introduction

This chapter examines the Beeline service area to identify locations where there are unmet travel needs. Several approaches are used to identify residential travel needs and current system needs. The first involves the Residential Transit Orientation Index (RTOI), a GIS-based analytical tool that utilizes 2000 census data to identify neighborhoods with a high orientation toward transit, based on the demographic characteristics of its residents. This information is used as an overlay on GIS maps of Beeline transit routes and compared to the existing transit network to identify areas with unmet transit needs. As an adjunct to the RTOI, we also consider employment density and location of major employers.

A second approach to defining and evaluating travel patterns involves the analysis of travel data from the 2000 census Journey-to-Work data. Commute patterns of Glendale and La Cañada Flintridge residents via all modes, not only transit, are reviewed to identify significant work trip patterns. We then assess the degree to which transit can serve these travel patterns.

A third approach identifies transit service needs and markets based on survey results and field observations by the study team. This approach also considers proposed developments expected to be completed within the next three years.

The final section of this report includes a summary of key findings under this task.

7.1 Travel Needs: Residential Transit Orientation Index

The Residential Transit Orientation Index (RTOI) compares census block groups within a given geographic area to one another with respect to five key variables related to propensity to use transit:

- Population in poverty
- Zero vehicle households
- Elderly population
- Youthful population
- Residential density

For each variable, a score is assigned to each census block group within the Cities of Glendale and La Cañada Flintridge and the unincorporated area of La Crescenta based upon how that variable compares to the area-wide average. The score is derived using a comparative probability estimation method. Population in poverty, zero vehicle households, and residential density scores are weighted by a factor of two, reflecting their importance in terms of transit ridership. A composite score is then obtained for each census block group by summing the scores for each of the five individual variables. These composite scores are then ranked and assigned to one of five transit orientation groups (very high, high, moderate, low, and other) based upon how each compares to the average score for the county as a whole.

The RTOI provides an effective tool to identify residential areas with a high propensity to use transit. When used in conjunction with operating and service-related data, it can assist in evaluating unmet needs within the study area.

Figure 7.1 presents residential transit orientation in the Beeline service area, while Figure 7.2 focuses on Glendale. Dark blue areas represent a very high orientation toward transit, while lighter blue areas are those with a high transit orientation.

All areas with a very high transit orientation are within the City of Glendale. Most of these areas are south of Colorado Street or just east of Brand in the vicinity of Broadway and are well-served by transit. The neighborhood south of Maple and east of Glendale Boulevard is served along Chevy Chase by Beeline Route 4 and Metro Line 183, but there are few north-south streets and residents are more likely to walk west to Glendale Boulevard (Metro Lines 90 and 91) or east to Chevy Chase (Beeline Route 4). The area south of Maple around San Fernando Road has Metro service, and most residents are within walking distance of Beeline Route 5 at Riverside & Pacific or Beeline Routes 1 and 2 along Central.

There are three other pockets of very high transit orientation in Glendale: south of Broadway between Chevy Chase and Verdugo (Beeline Routes 4 and 6 and several Metro lines); north of Broadway and west of Pacific (Beeline Route 5 along Pacific and Metro lines on either Pacific or San Fernando); west of Western between Glenoaks and San Fernando (Beeline Route 7 and several Metro lines).

Neighborhoods with high transit orientation (in light blue on Figures 7.1 and 7.2) are generally adjacent to areas with very high transit orientation and are well served by transit. Two outlying neighborhoods are in the category of high transit orientation; both of these neighborhoods have an unusually high youth population. These are in La Cañada Flintridge north of Foothill between Gould and Crown (served by Beeline Route 3 on Foothill) and in Glendale north of Honolulu between Dunsmore and the City limit (LADOT Commuter Express Line 409 is on Honolulu and Metro Line 90/91 is at Foothill and Pennsylvania).

The results of the RTOI indicate that there are no major unmet needs in the study area in terms of service area coverage for Glendale residents or for residents of other areas served by the Beeline. Beeline transit service is available directly or within a short walking distance in nearly all transit-oriented neighborhoods within its service area, and Metro service is available in all of these neighborhoods.

Figure 7.1
Glendale Area Residential Transit Orientation Index

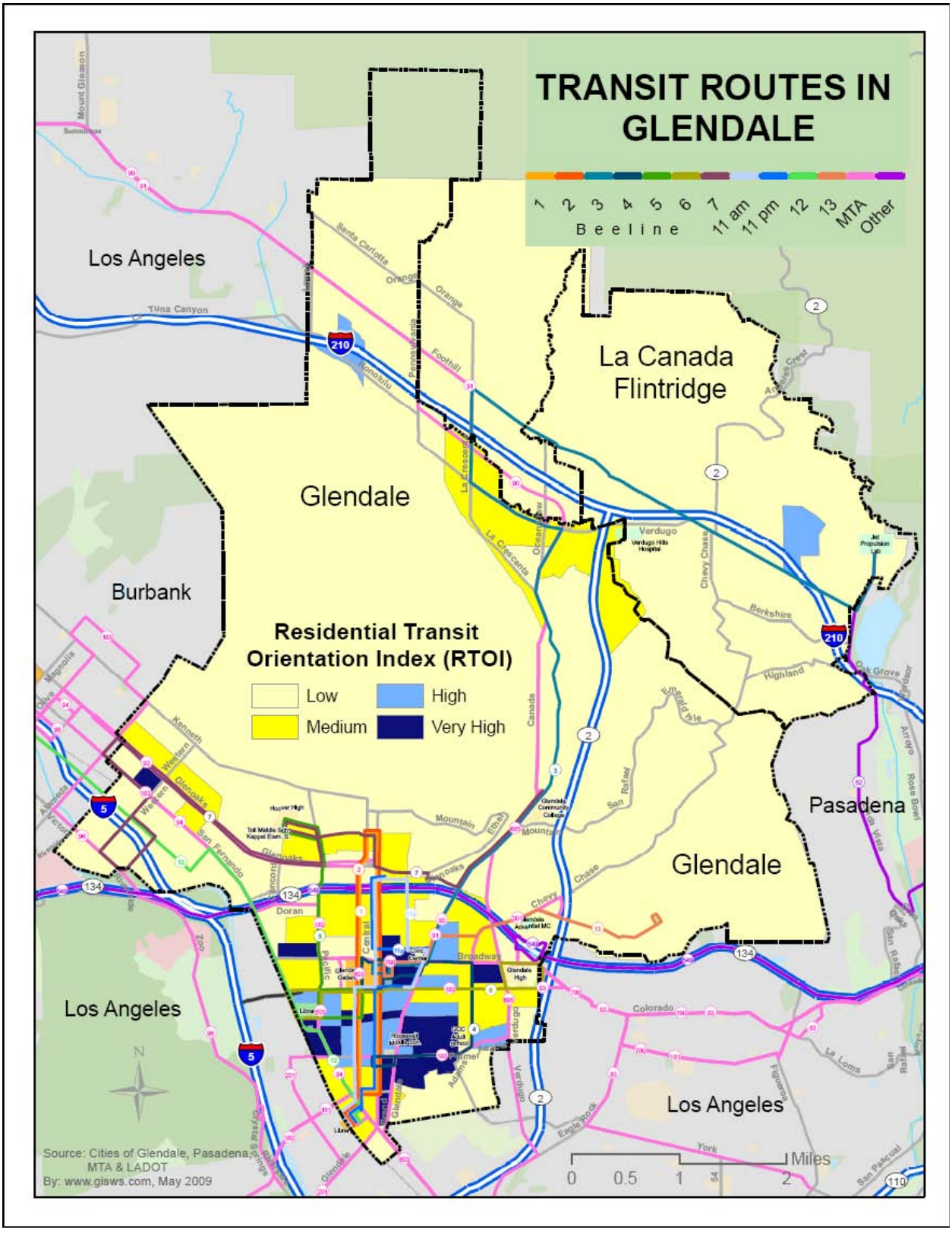
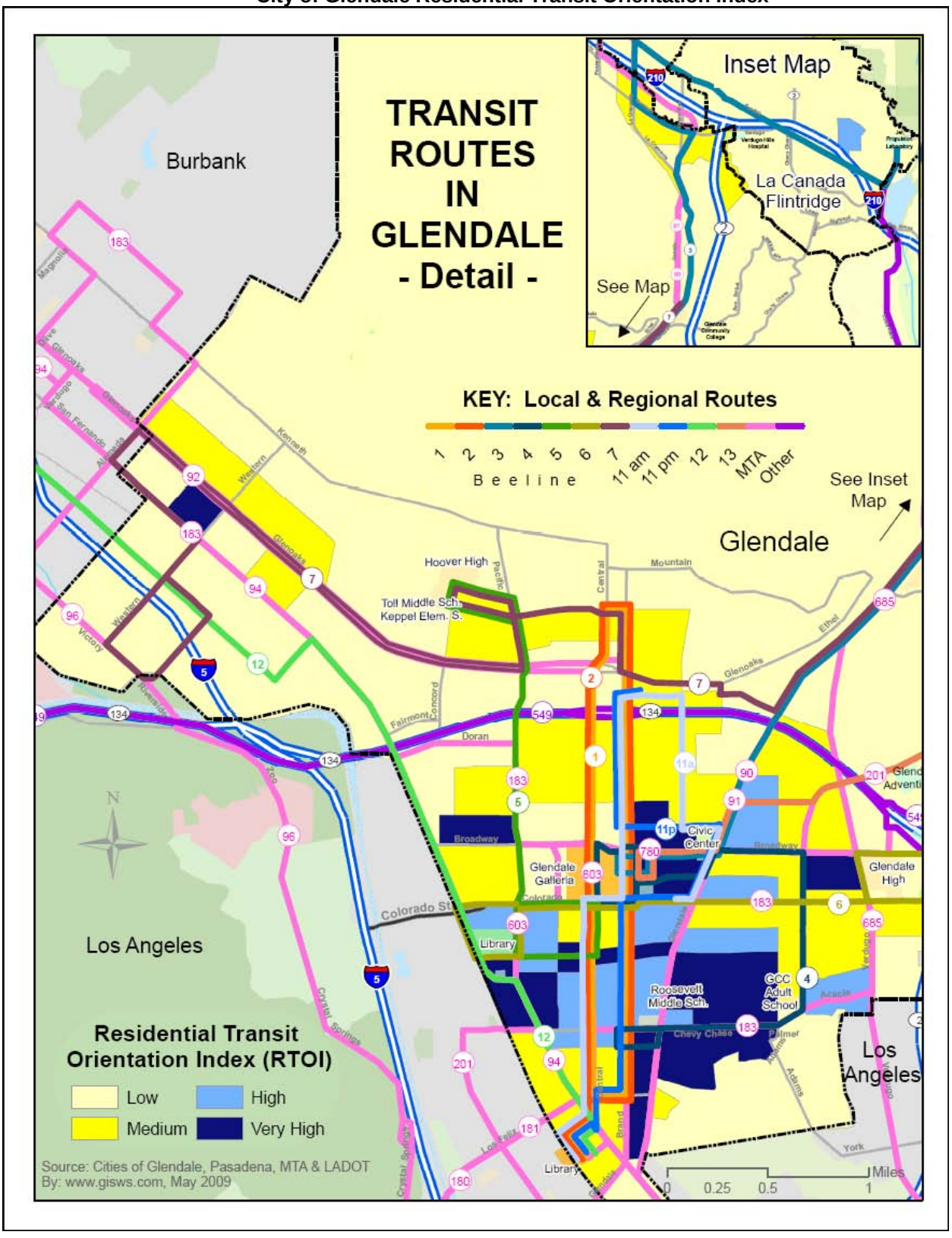


Figure 7.2
City of Glendale Residential Transit Orientation Index



7.2 Travel Needs: Trip Patterns and Employment

This section presents significant commute patterns from Glendale and La Cañada Flintridge using 2000 Census Journey to Work data. While this information is nine years old, previous census analyses have indicated that overall patterns remain fairly stable between one Census and the next, and so this is still the best source of commute data.

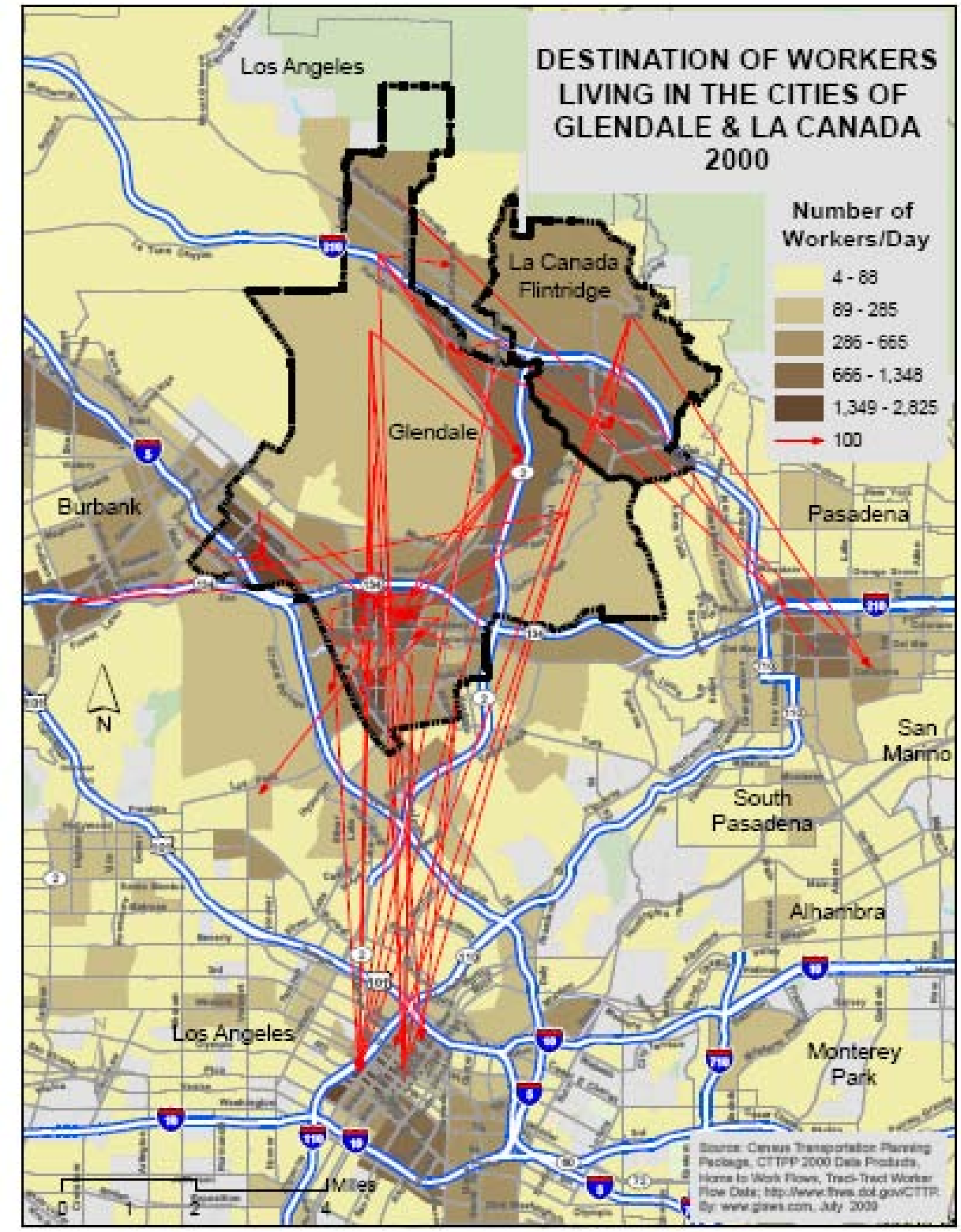
Figure 7.3 presents major commute patterns at the census tract level. The darker brown census tracts have the greatest number of work trip destinations from the Glendale area, while the arrows represent commute flows of 100 workers or more. Major destination tracts include downtown Glendale, downtown Los Angeles (especially the financial district), and the Grand Central area in northwest Glendale (where major commute flows are very short, indicating that workers from the area live close by). There are a few significant commute flows from census tracts in Glendale to the Burbank Media District and from census tracts in La Cañada Flintridge and far north Glendale to Pasadena. Surprisingly, there are no significant commute flows from any census tract in the area to JPL.

7.3 Other Unmet Needs

The on-board survey results (Chapter 5) indicate that improved frequency of service is the major improvement sought by existing riders, even on the most frequent routes in the system. This request should be viewed in the context of the very high ratings for current Beeline service. New or expanded routes ranked seventh among desired improvements and were cited by only five percent of respondents. Other improvements such as improved reliability, later or earlier service, more weekend service, friendly operators, and bigger buses all rank ahead of new or expanded routes.

Another important finding from the on-board survey is that 34 percent of all riders have no vehicles in their household. For many existing riders, transit is the primary or only mode choice.

Figure 7.3
Journey to Work Patterns of Glendale Area Residents



7.4 Summary of Unmet Needs in the Beeline Service Area

Glendale Beeline provides mobility to nearly all transit-oriented neighborhoods within its service area, and all are within an easy walk of Metro service. The RTOI analysis indicates that there are no major unmet needs. Survey results and travel data support this finding among both current riders and non-riders.

The primary improvement requested by customers is more frequent service, even on the most frequent lines. This reflects customers' natural desire for the greatest possible convenience, but improved frequency is among the most costly improvements.

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Glendale Beeline
2009 Line-by-Line Analysis
Chapter 8: Service Plan

8.0 Introduction

This chapter brings together the findings of the ridecheck and survey analyses, fieldwork by project team members, and discussions with Glendale transit staff and MV Transportation Staff to identify and analyze alternatives and make recommendations for transit improvements to the Beeline transit network.

As noted in previous chapters, the Beeline performs very well in terms of customer satisfaction, ridership and productivity. Nevertheless, this chapter identifies options that are intended to enhance productivity, provide more service where it is needed, improve service reliability, and achieve cost savings in light of reduced operating funding. The Beeline's success in providing mobility to Glendale residents is reflected in requests for route extensions and/or new routes in neighborhoods not currently served.

The following list is comprised of several major issues that are addressed in this line-by-line analysis of Beeline service. The discussion of each issue below provides a framework in which specific proposals are developed and assessed.

Section 8.1 summarizes issues and responses. Section 8.2 addresses alternatives and recommendations by route. Section 8.3 considers system expansion alternatives that the Beeline has either developed or been asked to consider. The final section (Section 8.4) presents a package of recommended improvements, along with ridership and cost or savings estimates for each.

8.1 Strategic Alternatives in Response to Major Issues

This section discusses alternatives and proposes recommendations related to major issues identified by Glendale Beeline at the outset of the line-by-line analysis.

More Frequent Service versus New Routes

Are there routes in the Beeline system whose ridership warrants more frequent service? How important is service frequency on existing routes versus the establishment of new routes?

Given limited resources, a decision to establish a new route must be weighed against opportunities to provide more frequent service in areas where there is proven demand. This dilemma is common to all transit systems: do we provide greater coverage (operate service in all parts of the service area) or do we provide greater frequency (operate more service along high-demand routes)?

There is no single "right" answer to the coverage versus frequency question. The recommendations included in this report lean toward frequency rather than coverage, because (1) the Glendale Beeline transit network has expanded considerably over the last decade, (2) the ridecheck revealed several instances of overcrowding, (3) several productive routes or route segments would benefit from additional service, and (4) Beeline expansion should not duplicate Metro service.

Schedules

Aside from changes to frequency of service, can the schedules be adapted to make it easier for customers to remember departure times? Are there opportunities for enhanced efficiency through scheduling techniques such as interlining?

The recommendations in this report address schedules for Beeline routes. Schedule adherence is an issue on several routes, and the ridecheck provides detailed data that can be used to prepare more appropriate schedules. Recommendations regarding schedules primarily address running time issues and may be thought of as tweaks to enhance service reliability rather than wholesale scheduling revisions.

Some routes operate at times that are difficult for the average transit rider to remember without consulting a schedule. Headways of every 15, 20, or 30 minutes are known as "clockface" headways (because a route serves any given stop at the same time each hour) and are usually easier for riders to remember. Many routes currently operate on clockface headways, but Routes 4, 5, 7, and 13 do not.

Even with clockface headways, times change at certain points during the day due to break requirements for operators. To the extent possible, consistent schedules are proposed that minimize time changes due to operator breaks. A test of alternate ways of addressing operator breaks such as "operator drop backs" on one or two routes is suggested to determine whether this would be feasible on the Beeline system.

Overcrowding

Most instances of overcrowding are school-related. Are there strategies that can be adopted to reduce or mitigate overcrowding, recognizing that standing loads are acceptable?

Table 8.1 lists the number of overcrowded trips (defined by a load of at least 125 percent of seated capacity) by route and time of day. The ridecheck found 36 overcrowded trips on five Beeline routes. Almost three-quarters of overcrowded trips were clearly school-related, and school loads could be a factor in several remaining trips. On all routes except Route 4, overcrowding occurred more often in the afternoon, usually around school bell times.

Table 8.1
Overcrowded Trips by Route and Time of Day

Route	# of Overcrowded Trips				
	Total	Weekday AM	Weekday PM	Saturday	School-related
3	7	3	4	0	7
4	13	8	4	1	4
5	6	2	4	0	5
6	1	0	1	0	1
7	9	4	5	0	9
Total	36	17	18	1	26

The definition of an overcrowded trip deserves emphasis. On a 30-seat bus, 125 percent of seated capacity is 37.5, so a load of 38 or greater is overcrowded. This definition differentiates between standing loads, which reflect productive service in a heavily-used transit system such as the Beeline, and "crush" loads.

One strategy explored here is "platooning" buses, or operating two buses over a route within five minutes of each other. One of the buses would be a regular bus on that route, while the second bus would be a "tripper," a bus added just for a single trip. The "tripper" bus may not be shown on the public timetable if it leaves at the same time as the regular bus, but it assists the regular bus by picking up the extra peak hour passenger loads.

One way to implement this concept is to pull out an express bus early to do a trip on a local route before starting express service. In the recommendations, two Route 12 buses pull out early to provide additional trips on Routes 3 and 5.

Poor Performance

What actions can be taken to improve the productivity of poorly performing routes? Are there restructuring opportunities? Can headways be adjusted to reflect demand? Are there opportunities to trim routes by discontinuing unproductive early or late trips? At what point is route discontinuation a reasonable option?

Most Beeline routes are reasonably productive in terms of boardings per revenue hour of service. This report proposes a minimum productivity level of 15 boardings per revenue hour. Any route not meeting this level should be discontinued. As a point of comparison, the system average is 39.7 boardings per revenue hour.

Route segments are also examined in this report. Productivity is generally lower at the residential ends of most transit routes, but in some cases the decrease is noticeably greater. One potential strategy to address this issue is to short-turn selected trips at a point where demand drops off on a given route.

Discontinuing unproductive early or late trips is frequently done by transit systems facing a budget deficit. The concept is a good one, but careful consideration is required before implementation. Late trips in particular often function as "safety valves" for passengers who occasionally must work late. Knowing that a late bus is available can be important factor in the decision to begin or continue transit use.

Table 8.2 presents ridership information on first and last trips by route and day. Trips with fewer than 10 boardings that could be cut are shown in bold in the table. Only local routes are included in Table 8.2. Trips on Metrolink Express Routes 11 and 12 need to be examined separately in conjunction with Metrolink schedules.

Table 8.2
Boardings on First and Last Trips by Route and Day

Route	Day	Direction	Early Trips	Boardings	Late Trips	Boardings
1	Weekday		**6:10**	**6**	**18:50**	**8**
					18:30	**9**
2	Weekday		6:00	19	18:40	18
3	Weekday	NB	5:29	16	18:45	12
		SB	5:45	10	**19:38**	**3**
4	Weekday	NB	6:00	11	**18:38**	**9**
					18:22	**8**
		SB	6:22	5	**19:00**	**8**
					18:44	**4**
					18:28	**3**
5	Weekday	NB	**6:20**	**8**	18:20	4
		SB	6:36	10	18:36	12
6	Weekday	EB	**6:00**	**3**	**18:20**	**4**
		WB	**6:16**	**4**	**18:36**	**5**
					18:21	**6**
7	Weekday	EB	6:00	23	**18:20**	**1**
		WB	6:10	10	**18:29**	**5**
13	Weekday	No trip in either direction has more than 6 boardings				
1	Saturday		9:00	19	16:54	14
2	Saturday		9:00	33	16:50	19
3	Saturday	NB	9:00	19	16:37	10
		SB	9:00	18	**17:06**	**7**
4	Saturday	NB	9:00	23	16:48	17
		SB	9:25	20	17:13	12
5	Saturday	NB	**9:00**	**3**	**16:39**	**5**
		SB	9:12	10	**16:51**	**3**
6	Saturday	EB	9:00	19	16:51	12
		WB	9:18	8	**17:09**	**6**
7	Saturday	EB	9:00	11	**16:39**	**3**
		WB	9:36	13	**16:35**	**5**
					15:55	**2**
1	Sunday		9:00	14	**16:54**	**6**
2	Sunday		9:00	19	16:50	21
4	Sunday	NB	9:00	30	16:48	11
		SB	9:25	6	17:13	12

Route 4 weekdays is an example of how the table works. The first southbound trip in the morning carries only five people, but this is the return trip from the first northbound trip with 11 boardings, so it is not a realistic candidate to be eliminated. In the afternoon, the last three southbound and last two northbound trips all have fewer than 10 boardings, so these are all candidates for discontinuation.

Requests for New Routes

The Glendale Beeline has received several requests for new service in various parts of the City of Glendale. The study investigated the following service requests:

- Downtown “Buzz” Circulator

- Olde Town Montrose trolley service
- Glendale Avenue south of Colorado Street
- Adams Hill
- Glenoaks Canyon
- Chevy Chase Canyon
- Northwest Glendale
- Far North Glendale
- Weekend Parks Route
- Downtown Holiday or Shopping Parking Shuttle

Criteria for assessing the viability of transit service or transit service concepts include:

- Ridership potential. The Residential Transit Orientation Index is a useful tool for identifying neighborhoods with a higher propensity to use transit.

- Operational feasibility. Several neighborhoods have narrow, winding streets that present significant challenges for bus operation.

- Cost. An order of magnitude estimate of required revenue hours is developed for each proposed service.

Results of the analysis for the requested services may be found in Section 8.3.

Regional Transit Service Connections

The Glendale Beeline operates as a community circulator and feeder service to Metro/LADOT long haul bus routes and regional rail service. Do the Beeline bus routes serving the Glendale Transportation Center or Burbank Regional Intermodal Transportation Center (BRITC) effectively connect to Metrolink service? Is the Beeline service effectively connecting with major Metro lines or providing effective transfers to neighboring community transit services?

Routes 11 and 12 are timed to meet specific Metrolink trains. Strategies regarding hold times for late trains in the morning and arrival times for afternoon trains are reviewed in this report. Route 12 meets trains at the Burbank and Glendale stations, complicating the scheduling for this route. Alternatives to ensure Metrolink connections are identified and assessed for Routes 11 and 12.

Metro connections are also important, especially connections to Metro Rapid lines. Metro Rapid Line 780 connects with at least one Beeline route at each of its five stops in Glendale, and offers multiple transfer points with Beeline Routes 1 and 2, 3, 4, 6, and 13 (Central & Colorado is the sole transfer point with Beeline Route 5). Varying headways on Line 780 (eight to 12 minutes peak, 15 minutes midday, 16 minutes Saturday, and 17 minutes Sunday) make it difficult to provide timed transfers. Adding to that difficulty, no stop within Glendale on Line 780 is a timepoint. This means that we have no times to match to Beeline schedules. Peak service on Line 780 is so frequent that timed connections are not necessary, but midday and weekend connections cannot be planned.

Beeline's current connections to Metro Rapid Line 794 are at San Fernando & Los Feliz with Beeline Routes 1 and 2 and at San Fernando & Alameda on Beeline Route 7. The Beeline stops are a block or two away at Central & Los Feliz (for Central Avenue service) or at Central &

Laurel (for Brand Boulevard service). Routes 1 and 2 operate every 20 minutes all day, while Line 794 headways are 12 minutes in peak periods, 24 minutes in the midday, and 30 minutes on weekends. As noted in Chapter 6, it is not possible to provide timed transfers between two services with differing headways. Route 1 and 2 schedules can be developed to minimize overall waiting times, especially in the midday and on weekends. Route 7 schedules can also be developed with this goal in mind. Additional connections to Metro Rapid Line 794 are identified and evaluated on Beeline Routes 4, 5, and 7.

Connections between Beeline routes and major Metro local routes such as Line 90/91, 92, 94, 180/181, and 603 have similar problems of mismatched headways. However, these Metro routes have frequent service during peak periods, which always makes transferring easier. Where possible, minimizing wait times at major transfer points is one goal as Beeline schedules are revised.

Overlap with Metro Routes

Under the Proposition A and Proposition C Ordinances which provide the primary funding for Glendale Beeline, transit services provided with Glendale's local return funds should not duplicate existing transit or paratransit services. There is an extensive approval process for new or expanded services that duplicate existing public transit service.

Metro operates several regional routes in and through Glendale. For this reason, some overlap is inevitable, especially in downtown Glendale. On corridors where Metro operates frequent service (every 12 minutes or better), overlapping service is appropriately viewed as duplicative and should be avoided.

In some circumstances it is mutually beneficial for the Beeline to contract with Metro to operate some route segments. One example is when the Beeline contracted with Metro to operate the western half of Metro Line 177 as part of Beeline Route 3. On the other hand, when Metro abandoned a portion of Route 201 along Glenoaks Canyon due to poor productivity, Glendale Beeline initiated replacement fixed route service on a trial basis with the same poor results, and subsequently implemented a smart shuttle service (Route 13) interspersed with Dial-A-Ride. Portions of the Route 3 extension are productive, especially around school bell times, but Route 13 ranks last in boardings per revenue hour among all Beeline routes.

Metro lines that could be the subject of future dialogue include coordination of Line 183 (from the Burbank border to GTC), portions of Line 201 (from downtown Glendale to Adventist Hospital), Line 685 (from Eagle Rock Boulevard to GCC), and, in coordination with La Cañada Flintridge, Line 177 from JPL to Memorial Park or Del Mar Gold Line Stations.

A strategy for the Beeline to analyze Metro routes that might be contracted would involve answers to the following questions:

1. Does the Metro route substantially duplicate existing Beeline service? Does it fill in an important gap in the Beeline network?

2. Is the productivity on the Metro route or route segment within 25 percent of the Beeline system average?

3. Is the City of Glendale interested in expanding the Beeline network beyond City limits? La Cañada Flintridge funds its portion of the operating costs of Route 3. What about other cities? Metro's perspective regarding funding is also important.

8.2 Alternatives and Recommendations for Existing Beeline Service

This section addresses existing Glendale Beeline routes. Each route is considered in turn, with an evaluation of potential alternatives and a list of recommended actions.

Routes 1 and 2

Considered together, Routes 1 and 2 would rank third among all Glendale Beeline lines in weekday ridership and seventh in weekday productivity (boardings per revenue hour). Ridership is over 2,000 on the two routes combined, but Routes 1 and 2 rank second in terms of service provided.

The primary function of both routes is to serve the Brand and Central commercial and retail corridors in and near downtown. Neither route serves residential areas of the City outside of downtown. A secondary function is to connect downtown with the GTC throughout the day and on weekends. Metro Rapid Line 794 formerly served Brand but now operates on San Fernando Road.

Issues related to Routes 1 and 2 include:

- Passenger confusion regarding which route is which. Route 1 travels northbound on Central and southbound on Brand. Route 2 travels northbound on Brand and southbound on Central. Existing riders are used to this arrangement, but it is confusing for potential riders. Does the Beeline need a north-south route on Brand Boulevard and another north-south route on Central Avenue?

- Lower productivity than expected. Ridership is good on these routes, but the high levels of service result in productivity numbers below the Beeline average. Route 2 ranks 6th and Route 1 8th among the ten Beeline weekday routes in productivity. Service exceeds ridership demand.

- Duplication. Duplicate service provided by Metro 92 also relates to the low productivity on both Beeline and Metro service. Between Metro and Beeline service there is a bus approximately every ten minutes along Brand.

- Interest in a signature service along Brand Boulevard. A previous mobility report proposed the "Buzz" concept of a frequent (15-minute headway) shuttle along Brand Boulevard with its own unique vehicles. How would this concept coordinate with or replace existing service on Routes 1 and 2?

Six options are identified for Routes 1 and 2:

1. ***No change – adjust running times only***. The routes serve Brand Boulevard and Central Avenue, major north-south corridors in Downtown Glendale, and perform acceptably. Under this and subsequent options, minor changes would be made to running times in the schedule. There is a small savings in operating cost for this option.

2. ***Change the route numbering so that all buses along Brand Boulevard are Route 1 and all buses along Central Avenue are Route 2***. The buses would continue to operate in the same way as they do now; the only difference would be that the operators would change the bus signage at Stocker. In theory, this would give each route a clearer identity and be more understandable to new riders. However, the lack of concern over this issue in the surveys and in fieldwork suggests that the current pattern is not difficult to understand. There is a small savings in operating cost for this option.

3. ***Reduce service to every 30 minutes instead of every 20 minutes on both routes***. As noted above, productivity on both routes is relatively low compared to other routes in the system, and the primary reason is the amount of service operated on Routes 1 and 2. 30-minute service on both routes would reduce revenue hours and the number of buses required and could be expected to improve productivity.

4. ***Operate Route 1 via Brand every 15 minutes and a shortened Route 2 (as far north as Doran) every 30 minutes via Central.*** While both corridors have similar ridership and productivity numbers, Brand Boulevard is a unique street within the City. This option would emphasize service along Brand. Route 1 would operate between the Glendale Transportation Center (GTC) and Stocker Street via Brand, and Route 2 would operate between GTC and Doran via Central. The routes would be partially interlined to preserve efficiency and ensure that an increase in buses or revenue hours would not be required. This option could also serve as an interim step toward "Buzz" service along Brand without unique vehicles. Note that additional buses and operating costs would be required to implement the "Buzz" concept as originally proposed (discussed in Section 8.3 below).

5. ***Discontinue the first and the last two weekday trips on Route 1***. The 6:10 a.m., 6:30 and 6:50 p.m. trips all have fewer than ten passenger boardings. There is a reduction in operating costs for this option.

6. ***Discontinue service along Central Avenue***. A less desirable option is to discontinue service along Central Avenue and focus all resources of this route on Brand Boulevard. Analysis of existing boardings and alightings reveal an even split between Central and Brand north of Los Feliz, as shown in Table 8.3. The level of passenger activity along Central suggests that continued service is justified. There is a small savings in operating cost for this option; resources would be reallocated to service along Brand Boulevard.

Table 8.3
Weekday Boardings and Alightings on Brand Boulevard vs. Central Avenue on Routes 1 and 2

Segment	Boardings		Alightings	
	Number	%	Number	%
Brand north of Los Feliz	928	44%	916	44%
Central north of Los Feliz	882	42%	923	44%
South of Los Feliz	295	14%	266	13%
Total	2105	100%	2105	100%

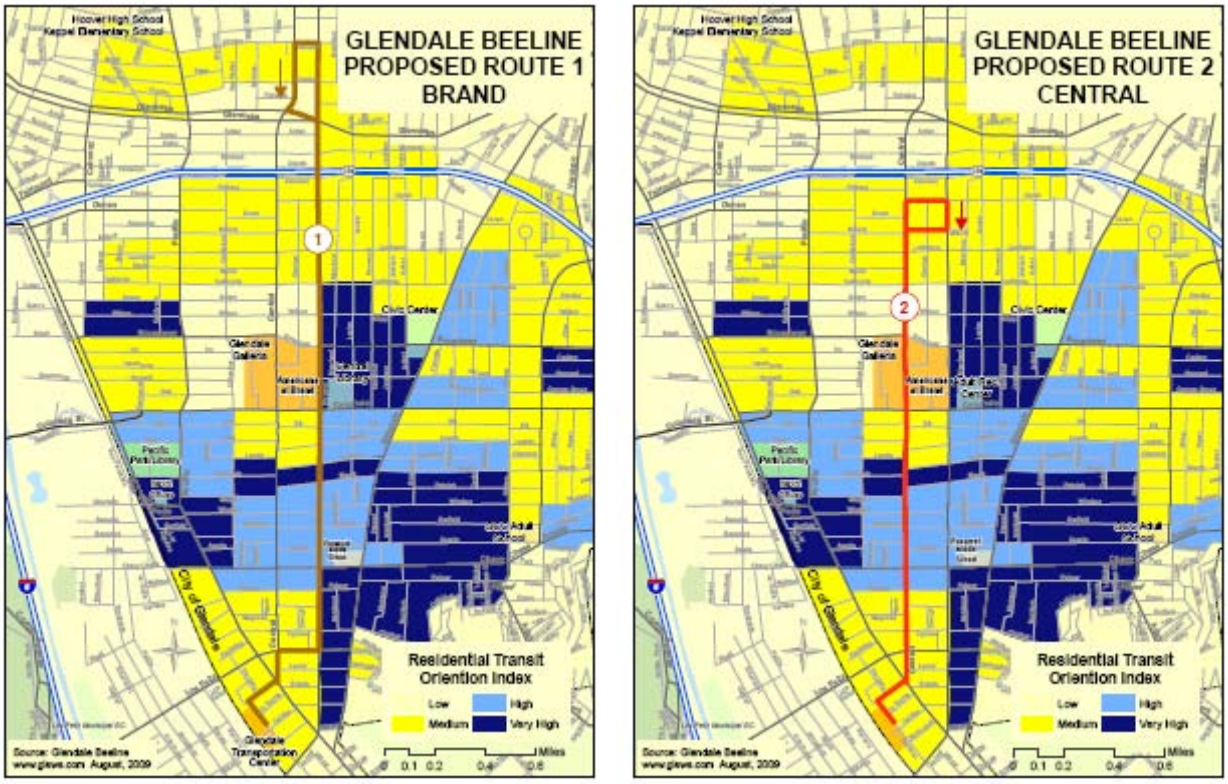
Table 8.4 summarizes the options identified for Routes 1 and 2. Running time changes are included in all options.

Table 8.4
Options and Impacts for Routes 1 and 2

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. Running time changes only	63.6	63.5	33.0	32.6	19,637	19,586	-51	5	5
2. Renumber	63.6	63.5	33.0	32.6	19,637	19,586	-51	5	5
3. 30-minute service	63.6	52.9	33.0	32.7	19,637	16,880	-2,758	5	4
4. 15-minute Brand/ 30-minute Central	63.6	63.4	33.0	39.9	19,637	20,301	663	5	5
5. Discontinue 3 weekday/1 Sunday trip on Route 1	63.6	61.1	33.0 Sa 33.0 Su	32.6 Sa 31.5 Su	19,637	18,932	-705	5	5
6. Discontinue service on Central (all service on Brand)	63.6	63.5	33.0	32.6	19,637	19,586	-51	5	5

The recommended option for Routes 1 and 2 is Option 4: 15-minute service on Brand and 30-minute service on Central. This option, shown in Figure 8.1, achieves increased frequency along Brand, an important goal of the Buzz concept, while continuing to serve most of Central Avenue. This can be done within existing weekday resources. Another weekend bus is required (an additional bus is available on weekends), thus increasing revenue hours on weekends and overall.

Figure 8.1
Recommended Option for Routes 1 and 2



Route 3

Route 3 has the highest ridership totals of any Beeline route on weekdays and ranks second on Saturday. Glendale College and La Cañada High School are the primary reasons for this strong ridership. Seven weekday trips have loads in excess of 125 percent of capacity on Route 3. All of these were related to college class times or afternoon bell times at high schools and middle schools along the route. These overcrowded trips have a negative impact on schedule adherence that spills over to subsequent trips.

Route 3 ranks only fourth in productivity on weekdays due to higher service levels, especially in La Cañada Flintridge. Route 3 includes a La Cañada shuttle operating on weekdays between Foothill Boulevard & Castle Road and JPL. The City of La Cañada Flintridge provides funding for this added service, and for six morning La Cañada express trips from a city-owned parking lot near Foothill Boulevard & Cornishon Avenue to La Cañada High School (Oak Grove Drive & Foothill Boulevard) and JPL. These six morning express trips carry a total of only 11 passengers.

On Saturday, Route 3 operates between downtown Glendale and Honolulu & La Crescenta in Glendale. No service is provided in La Cañada Flintridge on Saturday. Route 3 does not operate on Sunday.

Route 3 has multiple functions. Its primary purpose is to connect downtown with GCC. Ridership and productivity are strongest along this segment of the route. Connections to La Cañada High School on the northern portion of the route are also important, particularly in the

afternoon. Other schools in the area also contribute significant ridership in the afternoon. JPL is an important destination on Route 3, but is less important to the route than the schools, especially because many of the boardings and alightings at JPL are transfers to and from Metro Line 177 serving Pasadena.

GCC-related trips are very important along the Glendale portion of this long route, while La Cañada High School students dominate the segment along Foothill Boulevard. Ridership and productivity are lower in between, especially along Verdugo north of GCC and on the western segment of Foothill Boulevard.

Five options are identified for Route 3:

1. ***Truncate half of all trips at Glendale Community College***. Ridership and productivity by segment are shown for Route 3 in Table 8.5. The segment between Downtown Glendale and GCC accounts for about half of all Route 3 ridership but receives only about one-third of all revenue hours. Productivity is much higher along this segment (76 boardings per revenue hour compared to 29 on the other segments).

Table 8.5
Route 3 Ridership and Productivity by Route Segment

Route Segment	Ridership	Boardings per Revenue Hour
Downtown Glendale – GCC	1,896	76.4
GCC – Foothill & Castle	1,049	29.4
Foothill & Castle – JPL	985	29.4
Total	3,930	41.8

This option would reduce revenue hours slightly and reduce the number of buses on the route from seven to five (including the LCF shuttle bus operating between Foothill & Castle and JPL). This option would also allow the LCF shuttle bus to be scheduled more efficiently to "split the headway" along Foothill Boulevard (i.e., a bus every 20 minutes) for most of the day. The LCF shuttle is scheduled to leave a few minutes ahead of the long Route 3 bus at the afternoon dismissal time of La Cañada High School, to reduce overcrowding.

2. ***Move the LCF Express service to the afternoon*.** Only 11 passengers board the six morning express trips and there is a large demand for additional service to handle the La Cañada High School loads in the afternoon. La Cañada Flintridge is purchasing another bus for the shuttle service. LCF should keep the La Canada #1 bus to use for the LCF tripper service in the afternoon and return the LCF express bus on loan from the Beeline. There is no time savings on the morning LCF Express trips versus the regular Route 3/LCF shuttle trips; in fact, because the Express serves La Cañada High School directly, the trip to JPL is actually longer.

3. ***Add a Route 3 trip using a Route 12 bus before it begins afternoon service to reduce overcrowding***. The current southbound bus that leaves GCC at 3:37 is overcrowded. Instead of pulling out an afternoon bus directly to Route 12, the proposed schedule pulls out a bus to Route 3 to assist with overcrowding, before its first trip on Route 12. This concept of pulling out an express bus earlier in the afternoon to do a first

trip on another route that experiences overcrowding associated with school bell times maximizes the use of existing vehicles.

4. ***Discontinue the last southbound Route 3 trip on weekdays (7:38 p.m.) and Saturday (5:06 p.m.)***. Each trip serves fewer than eight passengers.

5. ***Extend the LCF shuttle in both directions to serve more of Foothill Boulevard and provide a direct connection to the Metro Gold Line in Pasadena***. This option would extend the LCF shuttle west along Foothill Boulevard to make connections with Metro Lines 90 and 91 and to serve portions of far North Glendale. This option would also extend the LCF shuttle east past JPL to the Del Mar or Memorial Station of the Gold Line. The eastward extension overlaps Metro Line 177 (which could spur discussions with Metro concerning operations and funding), but would provide passengers with a single-seat ride. This option would require an additional bus and would increase revenue hours. A variation on this option would extend all trips west and every other trip to Pasadena.

Table 8.6 summarizes the options identified for Route 3. All of these include running time adjustments.

Table 8.6
Options and Impacts for Route 3

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. Truncate half of all trips at GCC	94.58	68.48	24.68	24.07	25,401	18,714	-6,687	8	6
2. Move the LCF Express to the pm	94.58	94.58	24.68	24.07	25,401	25,370	-32	8	8
3. Truncate half of all trips at GCC plus add a pm trip	94.58	69.63	24.68	24.07	25,401	19,007	-6,394	8	6
4. Discontinue the last SB trip on all days	94.58	93.70	24.68	23.67	25,401	25,137	-264	8	8
5. Extend the LCF shuttle	94.58	105.38	24.68	24.07	25,401	28,124	2,722	8	7
Recommended (Options 2 + 3)	94.58	69.60	24.68	24.07	25,401	19,008	-6,393	8	6

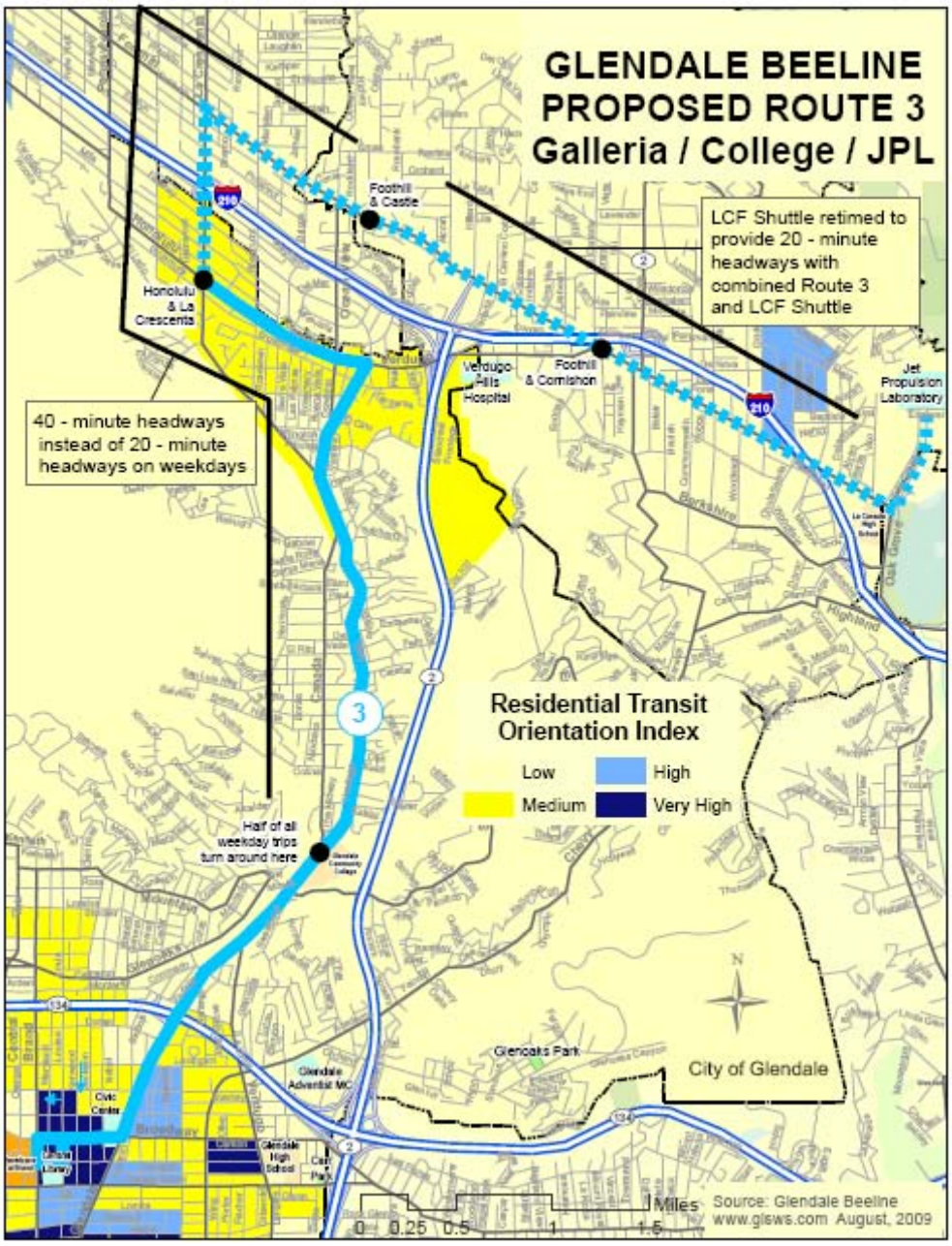
Note: Bus in extra trip in Option 3 and the recommended option is counted as a Route 12 bus to avoid double-counting.

The recommended option for Route 3 is a combination of Options 2 and 3: truncate half of all Route 3 trips at GCC, add a p.m. trip to address overcrowding, and discontinue the LCF express in the morning and use the resources in the afternoon. Since La Cañada Flintridge is purchasing another bus for the LCF shuttle, La Cañada Flintridge should keep the current LCF

shuttle bus to use for the LCF tripper service in the afternoon, and return the LCF express bus to the Beeline. This option reduces the number of buses required on Route 3 from eight to six (three buses on the entire route, one bus for Glendale – GCC service, one bus for the LCF shuttle, and one bus for the afternoon LCF supplemental service.

Figure 8.2 presents the recommendation for Route 3. This option maintains 20-minute service between downtown Glendale and GCC, and provides effective 20-minute service along Foothill Boulevard through schedule adjustments to the LCF shuttle. Service between GCC and Foothill & Castle now operates every 40 minutes instead of every 20 minutes.

Figure 8.2
Recommended Option for Route 3



Route 4

Route 4 is the only Beeline route aside from Routes 1 and 2 to operate seven days a week. This route is the most productive route on all days and ranks second only to Route 3 in terms of weekday ridership. Route 4 is a strong route that connects several destinations in and near Downtown Glendale.

Route 4 serves neighborhoods with a very high orientation toward transit. This is the primary factor in its high ridership and very high productivity. Route 4 is the second busiest weekday route in the Beeline system after Route 3 and the busiest weekend route. There are nine stops along the route that have over 100 boardings per weekday. The ridecheck identified 13 instances of overcrowding, 12 on weekdays and one on Saturday.

Route 4 is the most productive route on all days. The segment/time of day analysis indicates very high productivity on segments along Chevy Chase Drive.

Route 4 is a strong route that connects several destinations in and near downtown Glendale and serves neighborhoods where the demographics are favorable for high transit usage. At the time of the ridecheck, Brand & Broadway was the connecting point for Metro Rapid Line 794, but Metro has rerouted this service via San Fernando Road. A connection to Line 794 on San Fernando Road via Broadway is desirable. There are transit oriented neighborhoods west of the current Route 4 at both ends, on Chevy Chase and on Broadway.

Route 4 operates every 16 minutes. A 15-minute clockface headway would be ideal for this route, and there are some times of the day when additional running time is needed. Four options are identified for Route 4:

1. ***Extend Route 4 west via Broadway to San Fernando Road to provide additional connections with Metro and extend the east-west portion of the route****. Change the headway to 15 minutes*. This extension requires an additional bus, but allows the headway to be changed to 15 minutes and also allows running time changes. This extension serves a neighborhood with high transit orientation along Broadway and restores the connection with Metro Rapid Line 794.

2. ***Extend Route 4 west via Chevy Chase to San Fernando Road at a 15-minute headway***. This extension serves a neighborhood with high transit orientation north of Chevy Chase, provides a transfer option to Metro Line 94 (Line 794 does not stop at Chevy Chase), and could provide a connection with an extended Beeline Route 5.

3. ***Extend Route 4 west on both ends to San Fernando Road***. This option is a combination of Options 1 and 2. This option cannot be operated at a 15-minute headway; the existing 16-minute headway would be maintained.

4. ***Discontinue the last weekday trip in both directions on Route 4***. Each trip serves fewer than ten passengers.

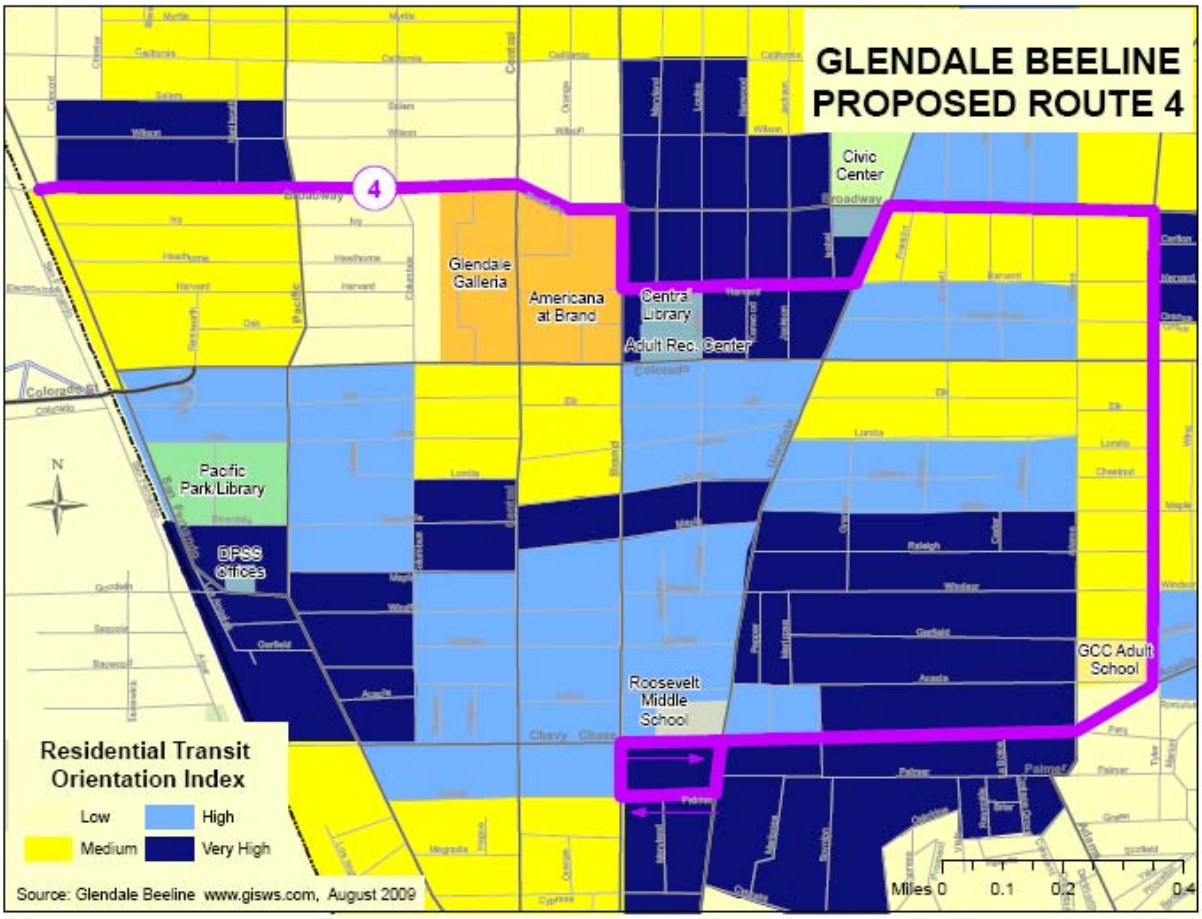
Table 8.7 summarizes the options identified for Route 4.

Table 8.7
Options and Impacts for Route 4

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. Extend west to Broadway & San Fernando plus 15-minute headway	38.45	50.97	16.27	25.85	11,497	15,478	3,981	3	4
2. Extend west to Chevy Chase & San Fernando plus 15-minute headway	38.45	50.97	16.27	23.85	11,497	15,478	3,981	3	4
3. Extend west at both ends of Route 4	38.45	51.13	16.27	24.08	11,497	15,542	4,046	3	4
4. Discontinue last weekday trips in both directions	38.45	37.65	16.27	16.27	11,497	11,293	-204	3	3

The recommended option for Route 4 is Option 1: extend west via Broadway to San Fernando and change headway from 16 to 15 minutes. Figure 8.3 shows the recommended option. Broadway is a better connection to San Fernando than Chevy Chase because Metro Rapid Line 794 stops at Broadway but not at Chevy Chase. Option 3 is attractive, but extending both ends of Route 4 results in a schedule in which 15-minute headways are not possible. The recommended option increase the number of buses required on Route 4 from three to four, an appropriate increase given the very high productivity on this route.

Figure 8.3
Recommended Option for Route 4



Route 5

Route 5 is the only north-south route west of downtown in the Beeline network. Its primary function is bringing students to and from Hoover High School and Toll Middle School. Approximately 40 percent of all passenger activity occurs at the Glenwood & Concord stop adjacent to the school.

Route 5 is strongest in ridership and productivity on weekdays, due to the importance of school trips on this route. All routes show the same trend of higher ridership on weekdays, but the Saturday decline is particularly noticeable on Route 5.

Weekday productivity is one of the strong points of this route, with the second-highest productivity in the Beeline system (trailing only Route 3). A few segments experience over 100 boardings per revenue hour at certain times of day.

Route 5 is fifth among the ten weekday routes in ridership. The ridecheck identified six trips with overcrowding, two northbound in the morning and four southbound in the afternoon. All of these overcrowded trips are school-related.

Issues for Route 5 include consistent headways (headways now alternate between 20 and 22 minutes), overcrowding on school trips, low Saturday ridership, and partial duplication with Metro Route 183.

Six options have been identified for Route 5:

1. ***Standardize the headway to 20 minutes on weekdays and 40 minutes on Saturday***. The alternating 20 and 22 minute headways are confusing and unnecessary on weekdays and the current 39-minute headway on Saturday is unwieldy.

2. ***Add a trip using a Route 12 bus to ease overcrowding at afternoon bell times***. Under this option, a current Route 12 bus would pull out early and make a southbound trip from Hoover High School just ahead of a regular Route 5 bus. This bus would then operate as a Route 12 bus for the rest of the afternoon.

3. ***Extend the route south, staying on Pacific to Riverdale, then east on Riverdale, south on Columbus, and west on Chevy Chase to Chevy Chase & San Fernando***. This would serve a transit-oriented neighborhood south of Riverdale Drive and provide a connection to San Fernando Road. It might also connect with an extended Route 4 at Chevy Chase Drive. The drawback of this option is that it would eliminate a connection at Central & Colorado with Beeline Routes 1 and 2, Metro Rapid Line 780, and Metro Route 180/181.

4. ***Discontinue Saturday service due to low ridership*****.** Route 5 carries under 250 riders on Saturday, the lowest total in the Beeline system. Its primary function is school-related, explaining the low Saturday ridership. However, because this route operates with only one bus on Saturday, its productivity is acceptable at 27.6 boardings per revenue hour.

5. ***Discontinue the first northbound trip on weekdays and Saturday and the last trip in both directions on Saturday***. Each of these trips serves fewer than nine passengers.

6. ***For future consideration, work with Metro to consolidate or reroute Metro Line 183***. Consider contracting with Metro to operate the portion of Line 183 between Burbank and Glendale. A combined and restructured route could provide service via Kenneth Road in northwest Glendale, an area that is currently not served.

Table 8.8 summarizes the options identified for Route 5. Running time changes are included in all options.

Table 8.8
Options and Impacts for Route 5

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. 20-minute headway	24.47	24.47	8.15	8.18	6,664	6,665	2	2	2
2. Add a school tripper	24.47	24.93	8.15	8.18	6,664	6,783	119	2	2
3. Extend south to Chevy Chase Drive	24.47	36.30	8.15	8.38	6,664	9,692	3,029	2	3
4. Discontinue Saturday service	24.47	24.47	8.15	0	6,664	6,240	-424	2	2
5. Discontinue 1 weekday and 3 Saturday trips	24.47	24.20	8.15	7.30	6,664	6,551	-113	2	2
6. Reroute Metro Line 183	Unknown – depends on terms of agreement with Metro								

Note: Bus in extra trip in Option 2 is counted as a Route 12 bus to avoid double-counting.

The recommended option for Route 5 is a combination of Options 1 and 2: establish a consistent headway of 20 minutes on weekdays and 40 minutes on Saturday and add a school tripper to address overcrowding in the afternoon. Option 3 is attractive, but would require an increase in revenue hours and an additional bus. Saturday productivity is acceptable and so Option 4 is not recommended.

Route 6

The primary function of Route 6 is to provide east-west crosstown service along Colorado Street. Downtown and Glendale High School are the major trip generators along the route. The high school is an important trip generator, but school ridership is not the dominant factor on this route. Route 6 connects several neighborhoods to downtown. Ridership activity is reasonably consistent across the route, with higher levels of boardings and alightings at major north-south streets.

Route 6 productivity is relatively high, 3rd on weekdays and 4th on Saturday. The ridecheck identified only one trip with overcrowding, related to afternoon bell times at Glendale High School. Eastbound trips in the midday and afternoon need additional time.

Two options have been identified for Route 6:

1. ***Minor schedule adjustments***. These are needed to achieve good schedule adherence.

2. ***Discontinuation of the first morning trip and the last afternoon trip in both directions on weekdays and of the last westbound trip on Saturday***. None of the weekday trips carries more than five passengers, and the last Saturday trip has only six riders.

The impacts of these options are shown in Table 8.9.

Table 8.9
Options and Impacts for Route 6

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. Adjust running time	25.22	25.32	16.22	16.50	7,275	7,315	60	2	2
2. Discontinue 4 weekday trips and 1 Saturday trip	25.22	23.97	16.22	15.92	7,275	6,940	-334	2	2

Option 1 is recommended for Route 6. No other changes are proposed at this time.

Route 7

Route 7 is one of the longer routes in the Beeline network, stretching east-west from the Burbank-Glendale border to GCC. The primary function of Route 7 is to connect the western part of Glendale with Hoover High School, Toll Middle School, and GCC. Weekday ridership is strong, due primarily to GCC, Hoover High School, and two middle schools along the route. The effects of student ridership can be seen in much lower Saturday ridership, a similar trend to that noted for Route 5. Route 7 is 3rd among Beeline routes in terms of ridership. The ridecheck identified nine trips with overcrowding, three eastbound in the morning and six westbound in the midday and afternoon. School-related boardings are the primary cause of the overcrowded trips.

Productivity is in the middle of the pack on weekdays and is lowest of all Saturday routes. The difference in ridership and productivity rankings is attributable to the high number of revenue hours on this route, which is one of the longest in the Beeline system. Saturday productivity on Route 7 is the lowest of all Saturday routes, due primarily to low ridership.

Service is provided every 27 minutes on weekdays, an odd non-clockface headway. Schedule adherence is poor on weekdays. Additional running time needed in both directions, particularly in the afternoon. Route 7 has the longest average trip lengths of any Beeline route.

Route 7 formerly served Hoover High School and Toll Junior High School via Glenwood Road and Stocker Street between Grandview and Pacific. The route alignment was changed due to resident concerns, keeping the route on Glenoaks and then doubling back to Hoover High School from Pacific. On Glenoaks, Route 7 duplicates Metro Line 92, which operates at similar frequencies for most of the day but every 10 to 12 minutes in peak morning and afternoon periods. The duplication of service along Glenoaks contributes to low productivity along this segment, and the alignment via Pacific results in an out-of-direction deviation to Hoover High School that lengthens travel time.

Six options are identified for Route 7. Running time changes are included in all options.

1. ***Change the weekday headway to 30 minutes***. This option creates a consistent clockface headway throughout the day, and should improve on-time performance. Saturday headway is 40 minutes under this option.

2. ***Discontinue Saturday service due to low productivity***. As noted above, Route 7 has the lowest productivity of any Saturday route at 15.4 boardings per revenue hour.

3. ***Streamline Saturday service via Pacific and Stocker and operate only as far east as Brand & Glenoaks*.** There is no need to serve Hoover High School or GCC on Saturday. This option would require only one bus on the route on Saturday instead of two. Saturday headway is 60 minutes under this option.

4. ***Discontinue the last trip in both directions on weekdays and Saturday***. None of these trips carries more than five riders.

5. ***Change the turnaround loop on the western end of the route to establish a stop at San Fernando & Sonora***. Instead of turning right at Western, Route 7 continues east on San Fernando to Sonora and turns right on Sonora, rejoining its current routing at Sonora & Flower. This establishes a connection with Metro Rapid Line 794 at San Fernando & Sonora.

6. ***For future consideration, reroute via Alameda – Allen – Kenneth – Grandview – Glenwood between Glenoaks & Allen and Hoover High School, and change the headway***. This option provides service in a section of town that has no bus service and a more direct link from the west to Hoover High. This option also eliminates the overlap with Metro Line 92 along Glenoaks. The disadvantage of this option is that transit orientation is low along Kenneth. While extending coverage, this option would require a longer walk to and from the bus stop for several current riders. Saturday headway is 45 minutes under this option.

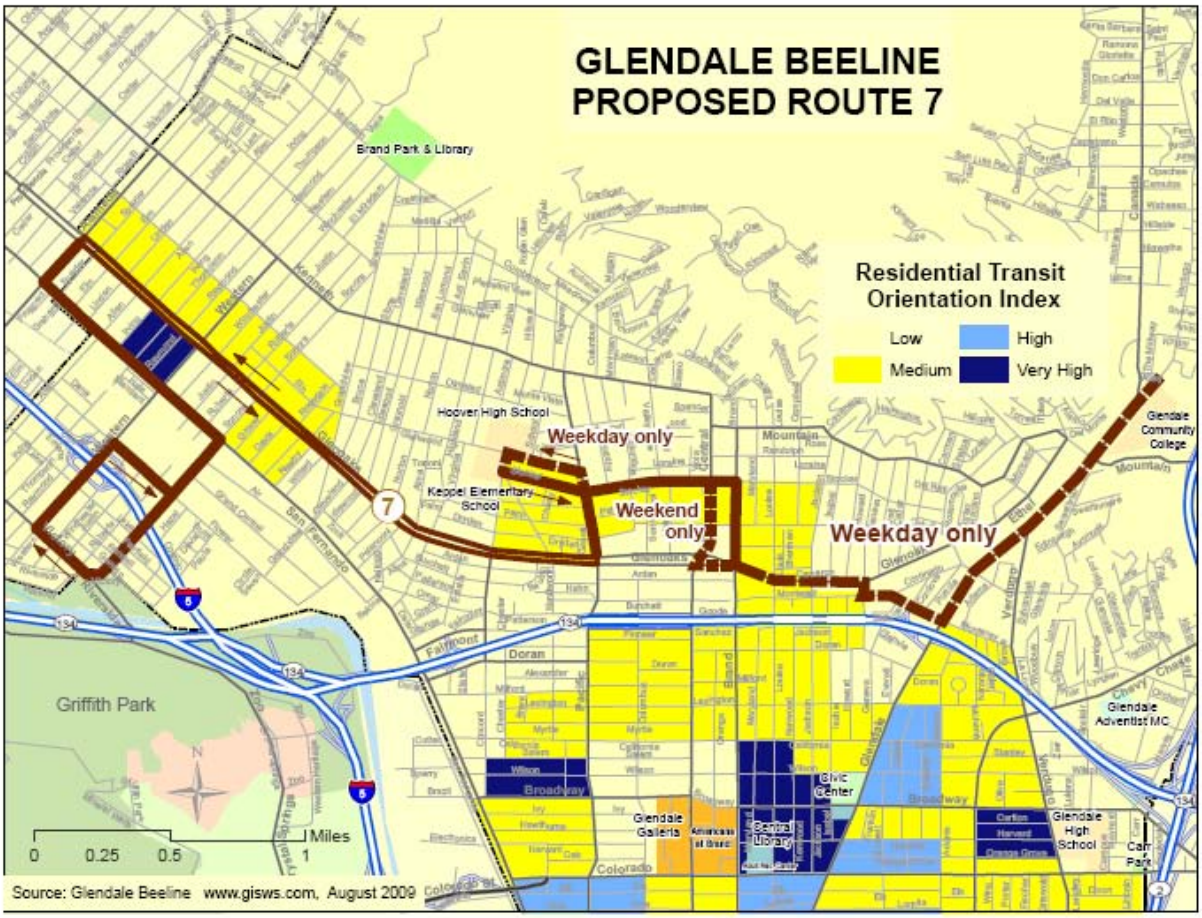
Table 8.10 shows the impacts of these options.

Table 8.10
Options and Impacts for Route 7

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Current	Future	Change from Current	Current	Future
1. 30-minute headway (40 Sat.)	38.18	38.78	15.75	15.67	10,555	10,704	149	3	3
2. Discontinue Saturday service	38.18	38.78	15.75	0	10,555	9,889	-666	3	3
3. Truncate/no service to Hoover HS on Saturday	38.18	38.78	15.75	7.73	10,555	10,291	264	3	3
4. Discontinue last trips on weekdays and Saturday	38.18	37.28	15.75	14.65	10,555	10,269	-286	3	3
5. Change turnaround to stop at San Fernando & Sonora	38.18	38.78	15.75	15.67	10,555	10,704	149	3	3
6. 30-minute headway and reroute via Kenneth	38.18	38.78	15.75	15.37	10,555	10,688	133	3	3
Recommended (Options 1, 3, 5)	38.18	38.78	15.75	7.73	10,555	10,291	-264	3	3

The recommendation for Route 7 is a combination of Option 1 on weekdays, Option 3 on Saturday, and Option 5 on all days: operate 30 minute headways on weekdays, truncate and streamline Saturday service and operate every 60 minutes, and establish a stop at San Fernando & Sonora. Figure 8.4 presents the recommended option for Route 7. The low transit orientation along Kenneth makes it difficult to recommend serving this street, even though Route 7 operates with Metro Line 92 along Glenoaks. Discontinuing Saturday service is a realistic possibility, but the proposed truncation at Brand & Glenoaks along with elimination of the deviation to Hoover High School on Saturday allows the route to operate with only one bus, which should improve productivity.

Figure 8.4
Recommended Option for Route 7



Route 11

Route 11 is one of two Metrolink express routes timed to meet Metrolink trains in the morning and afternoon peak periods. Route 11 connects the Glendale Transportation Center (GTC) with downtown Glendale. The route is well utilized and reasonably productive.

The primary function of Route 11 is to provide a timely connection between Metrolink and downtown Glendale for workers in downtown. Ridership is higher on Route 11 than on the other Metrolink Express route (Route 12). Productivity is higher on Route 11 than on some local Beeline routes. A few trips at the shoulders of the peak periods do not carry many passengers.

Two options are identified for Route 11. Running time changes are included in both options.

1. ***Discontinue the first trip in the afternoon (2:48 p.m.) due to low ridership***. Trips with the most ridership meet southbound Antelope Valley and Ventura County trains in the morning and northbound trains on these Metrolink lines in the afternoon. The 2:48 trip does not meet northbound trains on either line at GTC, which explains why it carries only four passengers.

2. ***Change trip times to allow at least two minutes from train to bus in the morning and at least seven minutes from bus to train in the afternoon***. Most morning trips meet this guideline, but several afternoon trips can be moved up slightly to help to ensure connections.

Table 8.11 summarizes the options identified for Route 11.

Table 8.11
Options and Impacts for Route 11

Option	Weekday Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Change from Current	Current	Future
1. Discontinue first afternoon trip	11.57	10.92	2,950	2,785	-166	2	2
2. Change trip times	11.57	11.53	2,950	2,940	-10	2	2

The recommendation for Route 11 is to implement both options. The 2:48 p.m. trip carries only four passengers, and Routes 1 and 2 provide an alternative to GTC in the early afternoon. Trip time changes will improve the reliability of bus-Metrolink connections.

Route 12

Route 12 is the second of two Metrolink express routes timed to meet Metrolink trains in the morning and afternoon peak periods. The primary function of Route 12 is to serve employment sites along the San Fernando/Flower corridor extending through Glendale and Burbank. Route 12 is challenging to schedule because it meets trains at both the GTC and the Burbank Regional Intermodal Transit Center (BRITC). Two-way service during both peak periods and lower ridership result in lower productivity than on Route 11, the other express route. A few trips at the shoulders of the peak periods do not carry many passengers.

Four options are identified for Route 12. Running time changes are included in all options.

1. ***Discontinue one afternoon trip to BRITC (at 2:50) and two afternoon trips to GTC (at 2:42 and 3:21) due to low ridership***. As with Route 11, trips with the highest ridership meet southbound Antelope Valley and Ventura County trains in the morning and northbound trains on these Metrolink lines in the afternoon. Only the 3:21 trip to GTC meets a northbound train on either line, but this trip carries no passengers on a typical day, probably because it operates only five minutes after the previous trip. The 2:50 trip to BRITC is only seven minutes after the previous trip and carries no passengers on a typical day. The 2:42 trip to GTC has one rider on a typical day.

2. ***Change trip times to allow at least two minutes from train to bus in the morning and at least seven minutes from bus to train in the afternoon***. Trip times are also changed to emphasize meets with southbound Antelope Valley and Ventura County trains in the morning and northbound trains on the same lines in the afternoon.

3. ***Discontinue service to/from BRITC and operate all trips between GTC and Flower & Alameda***. This option simplifies provision of service on Route 12 by requiring meets with trains at only one station. This option also reduces revenue hours and the number of buses needed on Route 12.

   There are two disadvantages to this option, both of which apply to passengers who travel southbound in the morning and northbound in the afternoon. The first disadvantage is a longer trip: most Metrolink trains take six minutes to travel between the Burbank and Glendale stations, and riders then need to ride north on Route 12 to their destinations. The second disadvantage is a more expensive trip, because Glendale and Burbank are in different Metrolink fare zones. As an example, a monthly pass between Chatsworth and Burbank is $162, while the cost is $198.75 between Chatsworth and Glendale.

4. ***Operate shuttles independently from both stations in place of the current through service connecting the two stations. Meet northbound trains at GTC and southbound trains in Burbank.*** While some passengers choose a longer bus ride to get to their place of work to save money on the monthly pass, most riders board and alight at the station nearest to work. This option would reduce revenue hours, but require one additional bus in the morning peak.

Based on recommendations for Routes 3 and 6, two Route 12 buses will pull out early to operate one trip on a local route to relieve school-related overcrowding. One bus would operate southbound on Route 3 from GCC and one would operate southbound on Route 5 from Hoover High School. Each bus would deadhead to GTC after finishing the local route and begin Route 12 service.

Table 8.12 summarizes the options identified for Route 12.

Table 8.12
Options and Impacts for Route 12

Option	Weekday Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Change from Current	Current	Future
1. Discontinue three trips	23.53	21.97	6,000	5,602	-398	4	4
2. Change trip times	23.53	22.17	6,000	5,653	-347	4	4
3. Operate to/from GTC only	23.53	12.72	6,000	3,244	-2,757	4	4
4. Operate separately at both stations	23.53	21.53	6,000	5,490	-510	4	4
Recommended (Options 1 and 2)	23.53	20.37	6,000	5,194	-807	4	4

Note: Hours associated with early pullouts to operate on local routes are included on the local route to avoid double-counting. This can be implemented in conjunction with any option that discontinues current Route 12 trips.

The recommendation for Route 12 is to implement Options 1 and 2. Combined, the trips proposed for discontinuation carry only one passenger on a typical day. The total savings is slightly greater than the sum of individual savings due to changes in how buses are assigned to trips.

Single-station operation at GTC is appealing from operational and fiscal perspectives. However, it would lengthen trips and increase Metrolink fares for many Route 12 riders. Option 4 is also attractive, but could result in underutilization of some buses and overutilization of others.

Route 13

The function of Route 13 is to provide service to the Glenoaks Canyon area of Glendale. The route is not well utilized: weekday ridership on Route 13 is 41 riders per day, lower than on any other Beeline route. Most riders are served by other routes: only six boardings and 12 alightings occur east of SR 2. Productivity is also the lowest of any Beeline route at 13.4 boardings per revenue hour. This is below the proposed standard of 15 boardings per revenue hour, and is the lowest of any route in the Beeline system. Even with improved access to downtown and the Beeline network, there is not enough demand in Glenoaks Canyon to warrant the cost of operating Route 13.

The only feasible option identified for Route 13 is to discontinue the route. The impact is shown in Table 8.13.

Table 8.13
Options and Impacts for Route 13

Option	Weekday Revenue Hours		Annual Revenue Hours			Peak Vehicles	
	Current	Future	Current	Future	Change from Current	Current	Future
Discontinuation	3.00	0.00	765	0	-765	1	0

The recommendation is to discontinue Route 13 due to low ridership and low productivity.

8.3 Recommendations for Requested New Routes

Several expansion alternatives have been proposed over the past few years. These are described and evaluated here.

Adams Hill

Adams Hill is a residential area centered on Adams Street south of Chevy Chase Drive. The proposal is to reroute Route 4 south on Adams Street as far as Stanford Drive. The streets in the area are narrow and winding, making it very difficult turn a bus around. The only feasible routing is to continue south on Adams across the city line into Los Angeles (where Adams Street becomes York Boulevard), then turn north on Verdugo Road, re-enter Glendale, turn left on Acacia Avenue and right on Chevy Chase Drive, rejoining the current Route 4.

This route deviation is approximately 2.3 miles. The average speed on Route 4 is 9 miles per hour, indicating an expected running time of 2.3/9=0.26 hour or 16 minutes. The net increase in travel time per each one-way trip would be 15 minutes, requiring two additional buses on Route 4 to maintain existing frequency. Each bus is in service for approximately 12 hours per day, thus adding 24 revenue hours daily.

What ridership could be expected? The Residential Transit Orientation Index (RTOI, presented in Chapter 7) indicates a low propensity to use transit in Adams Hill. Assume four added riders per trip (taken from the Route 13 average in a similar low-transit-orientation area). The number of added riders would be approximately 360 per day.
What happens to existing riders? The ridecheck indicates that there are 719 passengers riding through on board northbound Route 4 buses at Chevy Chase & Adams and 574 passengers on southbound buses at Chevy Chase & Acacia on a typical weekday. These passengers would experience an additional 15 minutes of travel time in each direction with an Adams Hill deviation. If only 25 percent of these riders changed their mode of travel in response to a significant increase in travel time, the net ridership impact of the change would be close to zero.

Another option would be a neighborhood circulator operating via a one-way loop along Chevy Chase – Acacia – Verdugo – York/Adams every 30 minutes, clockwise in the morning and counterclockwise in the afternoon. This option would add only 12 revenue hours daily and would not affect Route 4 operation. Assuming 10 riders per revenue hour, which is on the high end of what neighborhood circulators typically achieve, the route would have 120 riders per day.

Of course, several neighborhoods would want to have their own circulators. The Beeline would not have available vehicles to meet the demand for circulators, thus adding capital costs to these calculations.

Given limited operating and capital budgets for transit, the circulator concept is not a practical short-term recommendation. The City may decide to consider the concept in the future, but by their very nature circulators cannot achieve the ridership and productivity of regular Beeline routes.

Glenoaks Canyon

Glenoaks Canyon is a residential area centered on Glenoaks Boulevard east of the Glendale Freeway. Much of Glenoaks Canyon is currently served by Beeline Route 13, proposed for discontinuation due to low ridership and productivity. Transit orientation in this neighborhood is low. The topography of the canyon limits the service area for any transit route along Glenoaks Boulevard. This is a contributing factor to Route 13's poor performance, since it does not have a larger area from which to attract riders due to topographic constraints. This study recommends discontinuation of Route 13.

Chevy Chase Canyon

Chevy Chase Canyon is very similar to Glenoaks Canyon in its residential nature, its low transit orientation, and its limited service area due to topography. This area is centered on Chevy Chase Drive east of the Glendale Freeway. Given the demographic and topographic similarities and the low transit orientation in this neighborhood, any route in Chevy Chase Canyon could be expected to perform about as well as Route 13, which has been proposed for discontinuation. This study does not recommend service to Chevy Chase Canyon.

Northwest Glendale

The Northwest Glendale area previously was served by Metro Line 183, but Metro rerouted this line and the area is currently unserved. The RTOI shows medium transit orientation north of Glenoaks Boulevard and west of Grandview Avenue; the remainder of the area has low orientation toward transit. There are no topographic constraints in the area.

This study examined an option to reroute the Beeline Route 7 via Kenneth Road instead of Glenoaks Boulevard between Allen and Grandview, then continue via Glenwood Road to Hoover High School. This would extend service into the Northwest Glendale area and eliminate duplication with Metro Line 92 along Glenoaks. This option was not recommended due to the low transit orientation along Kenneth and the impact on walk distance to the bus for Hoover High and GCC students living south of Glenoaks. A second, longer-term option proposes that the Metro Line 183 be rerouted via Kenneth between Allen and Grandview.

Discontinuation of Line 183 service along Kenneth was probably an appropriate action for Metro to take; there is not huge demand on Kenneth. A Beeline route would make more sense than a Metro route in Northwest Glendale, but the low transit orientation is troubling. Beeline service in northwest Glendale should be considered as a long-range option, and would not be needed with a rerouting of Metro Line 183.

Far North Glendale

Far North Glendale is a residential neighborhood north of Foothill Boulevard. This area is hilly, making access to and from existing Metro and Beeline service on Foothill Boulevard difficult. Transit orientation is low in this neighborhood.

One option identified under Route 3 was an extension of the La Cañada Flintridge shuttle to provide a through route along Foothill Boulevard between Far North Glendale and Pasadena, also serving JPL. On its western end, this route is envisioned to turn north on New York (serving Clark Magnet High School), then west on Santa Carlotta Street, south on Lowell all the way to Honolulu (there are apartments in the area), east on Honolulu, and north on Boston to Foothill, where it would travel east. The route would connect to Beeline Route 3 at Foothill & La Crescenta. A variation on this option is to extend every trip west to Lowell and every other trip east to Pasadena.

As noted earlier in Table 8.6, this option would result in an annual increase of approximately 2,700 revenue hours, which is the primary reason that this option was not proposed in the near term. This is an intriguing concept to enhance Foothill Boulevard service and to serve Far North Glendale, but given the cost it is best considered as a longer-range option.

Olde Town Montrose

Olde Town Montrose extends along Honolulu Avenue between Ocean View Boulevard and Rosemont Avenue. The streetscape and shops have been attractively designed to present a unique shopping environment and encourage pedestrian activity. A proposal has been advanced to operate an Olde Town Montrose trolley service that links the old town to tourist destinations in the area (i.e., Descanso Gardens).

While theoretically appealing, a trolley in Olde Town Montrose is unlikely to attract ridership for two primary reasons. The first is that there are no "anchors" for such service other than the shops along Honolulu; there are no residential areas of sufficient density nearby to generate ridership to and from Olde Town Montrose. The second is that the amount of parking appears to be more than generous. This takes away a primary incentive to use a trolley.

Downtown trolleys are very appealing, especially to the business community, but there are not many examples of successful trolleys in terms of ridership and cost recovery. The Passport in Long Beach is the nearest example of a successful downtown trolley, but its success derives from the density of activity, including a convention center, multiple hotels, restaurants, and other tourist destinations. Financial support from the business community is a key component of successful systems. An Olde Town Montrose trolley needs additional study regarding potential areas to serve and the willingness of the business community to provide financial support.

"Buzz" Service along Brand Boulevard

The previous Beeline short-range transit plan proposed "The Buzz," a new service along Brand Boulevard that would utilize distinctive buses, improved stops and amenities, free service in the core of Downtown (between Colorado and Glenoaks), and 15-minute service. As noted earlier in the discussion of Routes 1 and 2, productivity is below the system average for both routes, suggesting that the current 20-minute service may be too much for demand. There are also issues with a free-fare zone: it introduces operational complexity and leaves open the issue of who will subsidize the free fares.

The recommendation for Routes 1 and 2 reconfigures service along Brand (now Route 1) and Central (now Route 2 traveling as far north as Doran) to achieve 15-minute headways along Brand. This recommendation envisions continued interlining between the routes to limit costs, so the same buses would operate on Routes 1 and 2. A distinctive logo on the buses and improved stops and amenities would be possible, but the buses would be used on both routes.

This recommendation achieves the intent of Buzz with existing service. It is unclear whether 15-minute service would be a sufficient improvement on the current 20-minute service to attract significant additional ridership. Also, the "branding" of Buzz buses on Brand would require separating the operation of the two routes to achieve the Buzz identity, thus reducing the efficiency of operation. It should also be noted that there are no capital funds for bus purchases, so existing buses would have to be rebranded.

Three concepts are explored with regard to Buzz service:

1. ***Separate Buzz service at every 15 minutes from Route 2 service at every 30 minutes.***

2. ***Operate the Buzz route every 15 minutes for the length of the route and every 7.5 minutes between Glenoaks and Colorado.*** Additional trips are inserted into the schedule between 8 a.m. and 4 p.m. weekdays and between 10 a.m. and 4 p.m. on weekends to provide very frequent service along the key segment of Brand.

3. ***Operate the Buzz route every 20 minutes for the length of the route and every 10 minutes between Glenoaks and Colorado.*** This option is slightly less costly than

Option 2, but still provides 10-minute service along Brand between Glenoaks and Colorado.

Table 8.14 summarizes the options identified for Buzz service. The table also includes the option recommended for Routes 1 and 2.

Table 8.14
Options and Impacts for "The Buzz" (including current Routes 1 and 2)

Option	Weekday Revenue Hours		Sat/Sun Revenue Hours		Change in Annual Revenue Hours	Change in Annual Net Operating Cost	Peak Vehicles	
	Current	Future	Current	Future			Current	Future
A. Recommended option - 15 Brand/ 30 Central to Doran	63.55	63.35	33.00	39.87	663	$36,000	5	5
B. 15-min. Buzz (branding)/30 Central to Doran	63.55	78.23	33.00	47.77	5,280	$304,000	5	6
C. 15/7.5 Buzz/30 Central to Doran	63.55	94.00	33.00	59.63	10,535	$582,000	5	8
D. 20/10 Buzz/30 Central to Doran with branding	63.55	80.45	33.00	50.80	6,161	$345,000	5	7

The recommended option for Routes 1 and 2 (listed first in Table 8.14) is the least costly option ($36,000 in net operating cost), while the Buzz option at every 7.5 minutes along the heart of Brand Boulevard is the most expensive ($582,000). Capital costs involved in purchasing and branding buses and improving bus stops are not included in this table, which lists only the change in revenue hours.

To what extent is frequency the key to Buzz service and to what extent is branding? The recommendation is to test rider reaction to the 15-minute headway recommended along Brand Boulevard and then to evaluate whether a more expensive, separately branded service is needed.

South Glendale Avenue

South Glendale Avenue (south of Colorado Street) is served by Metro Line 90/91, but not by the Beeline. Unlike several other unserved areas in Glendale, the neighborhoods along South Glendale Avenue show a high orientation toward transit. While there are no major unserved destinations in this area, it does appear to be promising territory for transit.

The previous SRTP proposed a new route via Glendale Avenue between the GTC and GCC, replacing a GCC connection from the west side of the City via the current Beeline Route 7. The new route would duplicate existing Route 3 service north of Broadway, and would duplicate Metro Lines 90 and 91 for nearly the entire length of its proposed route. A connection to the train station seems logical, but there is not a high demand for rail to work trips along this corridor and most community college students do not have incomes that allow them to take Metrolink on a regular basis.

The major argument against Beeline service on South Glendale Avenue is duplication with the frequent service on Metro Line 90/91 (every six to eight minutes in the morning peak, every 12 minutes in the afternoon peak). Weekday ridership totals on Metro Line 90/91 along South Glendale Avenue south of Colorado Street are 737 boardings and 692 alightings, indicating that this is a strong transit segment. To overlay Beeline service on frequent and heavily used Metro lines is difficult to justify, particularly when the cost is considered: a connection between South Glendale Avenue and downtown would require at least 24 daily revenue hours of service. Even under favorable cost circumstances, the Beeline cannot introduce service that operates on top of Metro lines unless there are capacity issues on the Metro lines. Metro's approval would be needed and would be difficult to obtain, given ridership and frequency of service on Line 90/91.

In the near term, this report does not recommend new Beeline service on South Glendale Avenue, due to the duplication of successful Metro lines.

Parks Route

A weekend route connecting the various parks in Glendale is another appealing concept at first glance that becomes operationally challenging. It is true that some of the most beautiful parks in Glendale (e.g., Deukmejian Park) are either inaccessible or difficult to reach via transit. However, steep terrain and narrow and winding streets (often in residential areas) make it nearly impossible for a bus to access several park locations, and bus turnaround movements also present difficulties.

Beeline staff drove a proposed parks route to measure distances and travel time. The route design assumed operation on summer weekends only along a 22.4 mile loop serving 11 locations. Service would operate from 9:00 a.m. to 6:20 p.m., resulting in an additional 8.75 revenue hours on each weekend day during the summer months or an annual total of 227.5 revenue hours. Ridership is unknown but is likely to be in the range of 5 to 10 boardings per revenue hour at best.

Many of the parks are accessible by regular Beeline routes; these parks do not appear to generate the number of trips needed to justify a new route. Other parks are impossible to serve because of topographic and operational constraints. While an interesting idea, the parks route cannot be recommended due to operational concerns, cost, and uncertain usage.

Holiday Shopping or Parking Shuttle along Brand Boulevard

Changes to Routes 1 and 2 and/or Buzz service may alleviate the need for a holiday shuttle along Brand Boulevard. Several years ago, the Beeline implemented a shopping shuttle, but it was never successful. There appears to be ample parking in Downtown, which hurts the chances of success of any shuttle.

A Downtown Glendale Parking Shuttle demonstration project was conducted in May and June 2008 in conjunction with the opening of Americana at Brand. A shuttle operating approximately every 20 minutes connected three parking locations (Orange & California, Maryland & Broadway, and Maryland & Harvard) with Americana at Brand and the Glendale Galleria. A total of 621 revenue hours of service were operated during May and June. Ridership for the two months was 1,048, resulting in a productivity figure of 1.69 boardings per revenue hour. This extremely low productivity resulted in termination of the demonstration project.

It may be argued that the holiday season would be more conducive to a parking shuttle. However, anticipated gridlock with the opening of Americana at Brand provided ample motivation for passengers to use the shuttle. It is unlikely that a holiday shuttle would generate sufficient ridership and productivity to justify the service.

8.4 Impacts of Recommendations

Tables 8.15 and 8.16 show daily and annual impacts of proposed short-term changes. The proposed short-term changes result in an annual cost savings of $208,000, with a projected revenue increase of $15,000 for a net savings of $223,000.

Table 8.15
Daily Impacts of Recommendations

Route	Recommendation	Daily Impacts on					Peak Vehicle Requirements
		Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours	
Short-Term Recommendations							
1 and 2 weekday	15 minute service on Brand; 30-minute service on Central to Doran	9	$2	($12)	($13)	(0.20)	0
1 and 2 Saturday		114	$20	$398	$378	6.87	1
1 and 2 Sunday		62	$11	$398	$387	6.87	1
3 Weekday	Truncate half of all trips at GCC; add p.m. trip ; move LCF express to pm	(266)	($48)	($1,447)	($1,399)	(24.95)	(2)
3 Saturday	Running time changes	0	$0	($35)	($35)	(0.61)	0
4 Weekday	15 minute service plus extension west on B'way to San Fernando Rd	500	$90	$726	$636	12.52	1
4 Saturday		236	$42	$440	$397	7.58	1
4 Sunday		181	$33	$440	$407	7.58	1
5 Weekday	20 minute service plus tripper	12	$2	$27	$24	0.46	0
5 Saturday	40 minute service	0	$0	$2	$2	0.03	0
6 Weekday	Running time changes	0	$0	$6	$6	0.10	0
6 Saturday		0	$0	$16	$16	0.28	0
7 Weekday	30/60 minute service weekdays/ Saturday; truncated route Saturday	15	$3	$35	$32	0.60	0
7 Saturday		(116)	($21)	($465)	($444)	(8.02)	(1)
11 Weekday	Discontinue 1 trip; trip time changes	(2)	($1)	($38)	($37)	(0.65)	0
12 Weekday	Discontinue 3 trips; trip time changes	(1)	($1)	($183)	($183)	(3.16)	0
13 Weekday	Discontinue	(41)	($7)	($174)	($167)	(3.00)	(1)
Total Short-term Weekday		227	$40	($1,060)	($1,100)	(18.28)	(2)
Total Short-term Saturday		234	$42	$356	$313	6.13	1
Total Short-term Sunday		242	$44	$838	$794	14.45	2

Notes:
Ridership estimated using: Service elasticity of +0.6 for current service except half of actual ridership on Route 11 and 12 trips eliminated and all of Route 13 ridership.
Route 3 elasticity calculations use only boardings between GCC and Foothill & Castle
Revenue estimated using current average fare for Beeline($0.180 for local and $0.537 for express)
Operating cost calculated using marginal cost of $58.00 per hour

Table 8.16
Annual Impacts of Recommendations

Route	Recommendation	Annual Impacts on				
		Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Short-Term Recommendations						
1 and 2 weekday	15 minute service on Brand; 30-minute service on Central to Doran	2,346	$422	($2,958)	($3,380)	(51)
1 and 2 Saturday		5,903	$1,063	$20,720	$19,657	357
1 and 2 Sunday		3,207	$577	$20,720	$20,143	357
3 Weekday	Truncate half of all trips at GCC; add p.m. trip ; move LCF express to pm	(67,754)	($12,196)	($368,961)	($356,766)	(6,361)
3 Saturday	Running time changes	0	$0	($1,840)	($1,840)	(32)
4 Weekday	15 minute service plus extension west on B'way to San Fernando Rd	127,538	$22,957	$185,171	$162,214	3,193
4 Saturday		12,254	$2,206	$22,861	$20,656	394
4 Sunday		9,390	$1,690	$22,861	$21,171	394
5 Weekday	20 minute service plus tripper	3,170	$571	$6,803	$6,233	117
5 Saturday	40 minute service	26	$5	$90	$86	2
6 Weekday	Running time changes	0	$0	$1,479	$1,479	26
6 Saturday		0	$0	$844	$844	15
7 Weekday	30 minute service and running time changes	3,924	$706	$8,874	$8,168	153
7 Saturday		(6,032)	($1,086)	($24,188)	($23,103)	(417)
11 Weekday	Discontinue 1 trip; run time changes	(510)	($274)	($9,614)	($9,340)	(166)
12 Weekday	Discontinue 3 trips; run time changes	(255)	($137)	($46,786)	($46,649)	(807)
13 Weekday	Discontinue	(10,455)	($1,882)	($44,370)	($42,488)	(765)
Total Short-term Weekday		58,004	$10,168	($270,361)	($280,529)	(4,661)
Total Short-term Saturday		12,151	$2,187	$18,488	$16,301	319
Total Short-term Sunday		12,597	$2,268	$43,581	$41,314	751
Annual Total		**82,752**	**$14,622**	**($208,292)**	**($222,914)**	**(3,591)**

8.5 Additional Service Reduction Alternatives If Faced With Future Budget Shortfalls

Transit agencies throughout southern California are facing budget shortfalls as local sales tax revenues decline. Thus, it is prudent to plan for a worst-case scenario consisting of actions that, while not recommended in this report, could be taken if the Beeline sales tax revenue continues to decline.

Table 8.17 and 8.18 show the daily and annual impacts of options that would yield additional cost savings. Options include cutting out early and late trips on most routes that are lightly utilized, reducing service on Routes 1 and 2 to every 30 minutes, and discontinuing Saturday service on Routes 5 and 7. These actions would result in an added reduction of operating costs of $358,000, with a net reduction (after accounting for revenue decreases) of $341,000. The total annual impacts of all recommendations in Table 8.16 and all options in Table 8.18 would be a net reduction in operating costs of $564,000 annually.

Table 8.17
Daily Impacts of Additional Actions

Route	Recommendation	Daily Impacts on					Peak Vehicle Requirements
		Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours	
Short-Term Recommendations							
1 and 2 weekday	30 minute service on both routes; discontinue select trips	(221)	($40)	($778)	($738)	(13.41)	(1)
1 and 2 Saturday		(112)	($20)	($418)	($397)	(7.20)	(1)
1 and 2 Sunday		(77)	($14)	($418)	($404)	(7.20)	(1)
3 Weekday	Discontinue select trips	(2)	($0)	($51)	($51)	(0.88)	0
3 Saturday		(4)	($1)	($23)	($23)	(0.40)	0
4 Weekday	Discontinue select weekday trips	(5)	($1)	($33)	($32)	(0.57)	0
4 Saturday		0	$0	$0	$0	0.00	0
4 Sunday		0	$0	$0	$0	0.00	0
5 Weekday	Discontinue first NB trip	(4)	($1)	($15)	($15)	(0.27)	0
5 Saturday	Discontinue Saturday service	(226)	($41)	($474)	($434)	(8.18)	(1)
6 Weekday	Discontinue select trips	(16)	($3)	($73)	($70)	(1.25)	0
6 Saturday		(6)	($1)	($17)	($16)	(0.30)	0
7 Weekday	Discontinue first NB trip	(6)	($1)	($87)	($86)	(1.50)	0
7 Saturday	Discontinue Saturday service	(127)	($23)	($448)	($425)	(7.73)	(1)
11 Weekday	No additional changes						
12 Weekday	No additional changes						
13 Weekday	Already discontinued						
Total Short-term Weekday		(253)	($46)	($1,037)	($991)	(17.88)	(1)
Total Short-term Saturday		(475)	($85)	($1,381)	($1,295)	(24)	(3)
Total Short-term Sunday		(77)	($14)	($418)	($404)	(7)	(1)

Table 8.18
Annual Impacts of Additional Actions

Route	Recommendation	Annual Impacts on				
		Ridership	Revenue	Operating Cost	Net Op. Cost	Revenue Hours
Short-Term Recommendations						
1 and 2 weekday	30 minute service on both routes; discontinue select trips	(56,445)	($10,160)	($198,383)	($188,223)	(3,420)
1 and 2 Saturday		(5,846)	($1,052)	($21,715)	($20,663)	(374)
1 and 2 Sunday		(4,027)	($725)	($21,715)	($20,990)	(374)
3 Weekday	Discontinue select trips	(383)	($69)	($13,065)	($12,996)	(225)
3 Saturday		(182)	($33)	($1,206)	($1,174)	(21)
4 Weekday	Discontinue select weekday trips	(1,148)	($207)	($8,381)	($8,174)	(145)
4 Saturday		0	$0	$0	$0	0
4 Sunday		0	$0	$0	$0	0
5 Weekday	Discontinue first NB trip	(1,020)	($184)	($3,944)	($3,760)	(68)
5 Saturday	Discontinue Saturday service	(11,752)	($2,115)	($24,671)	($22,556)	(425)
6 Weekday	Discontinue select trips	(4,080)	($734)	($18,488)	($17,753)	(319)
6 Saturday		(312)	($56)	($905)	($849)	(16)
7 Weekday	Discontinue first NB trip	(1,530)	($275)	($22,136)	($21,860)	(382)
7 Saturday	Discontinue Saturday service	(6,604)	($1,189)	($23,314)	($22,125)	(402)
11 Weekday	No additional changes	0	$0	$0	$0	0
12 Weekday	No additional changes	0	$0	$0	$0	0
13 Weekday	Already discontinued	0	$0	$0	$0	0
Total Short-term Weekday		(64,605)	($11,629)	($264,396)	($252,767)	(4,559)
Total Short-term Saturday		(24,696)	($4,445)	($71,811)	($67,366)	(1,238)
Total Short-term Sunday		(4,027)	($725)	($21,715)	($20,990)	(374)
Annual Total		**(93,327)**	**($16,799)**	**($357,922)**	**($341,123)**	**(6,171)**

Glendale Beeline
2009 Line-by-Line Analysis
Chapter 9: Service in La Cañada Flintridge

9.0 Introduction

This chapter analyzes Beeline service in La Cañada Flintridge and proposes changes to improve efficiency and maximize use of transit resources. Three different services are operated on weekdays only along Foothill Boulevard in La Cañada Flintridge:

1. Long trips on Beeline Route 3 between Downtown Glendale and the Jet Propulsion Laboratory (JPL). Service is provided every 20 minutes.

2. La Cañada shuttle (LCF) service between Foothill Boulevard & Castle Road and JPL throughout the day. Shuttle trips operate about every 35 minutes. The City of La Cañada Flintridge provides funding for this added service.

3. La Cañada express (LCFX) trips from a city-owned parking lot near Foothill Boulevard & Cornishon Avenue to La Cañada High School (Oak Grove Drive & Foothill Boulevard) and JPL. There are six express trips during the morning. Two of the three stops are not timepoints, and so these trips are not shown on the Route 3 timetable. The City of La Cañada Flintridge provides funding for these morning express trips.

Figure 9.1 is a map of Route 3. The RTOI is a measure of the transit orientation of neighborhoods and is described fully in Chapter 7. La Cañada Flintridge is characterized by low transit orientation due to generally high incomes and auto ownership levels and low residential density. Weekday service includes the solid and hash lines. On Saturday, Route 3 operates between downtown Glendale and Honolulu & La Crescenta in Glendale (the solid blue line). No service is provided in La Cañada Flintridge on Saturday. Route 3 does not operate on Sunday.

9.1 Ridership and Productivity

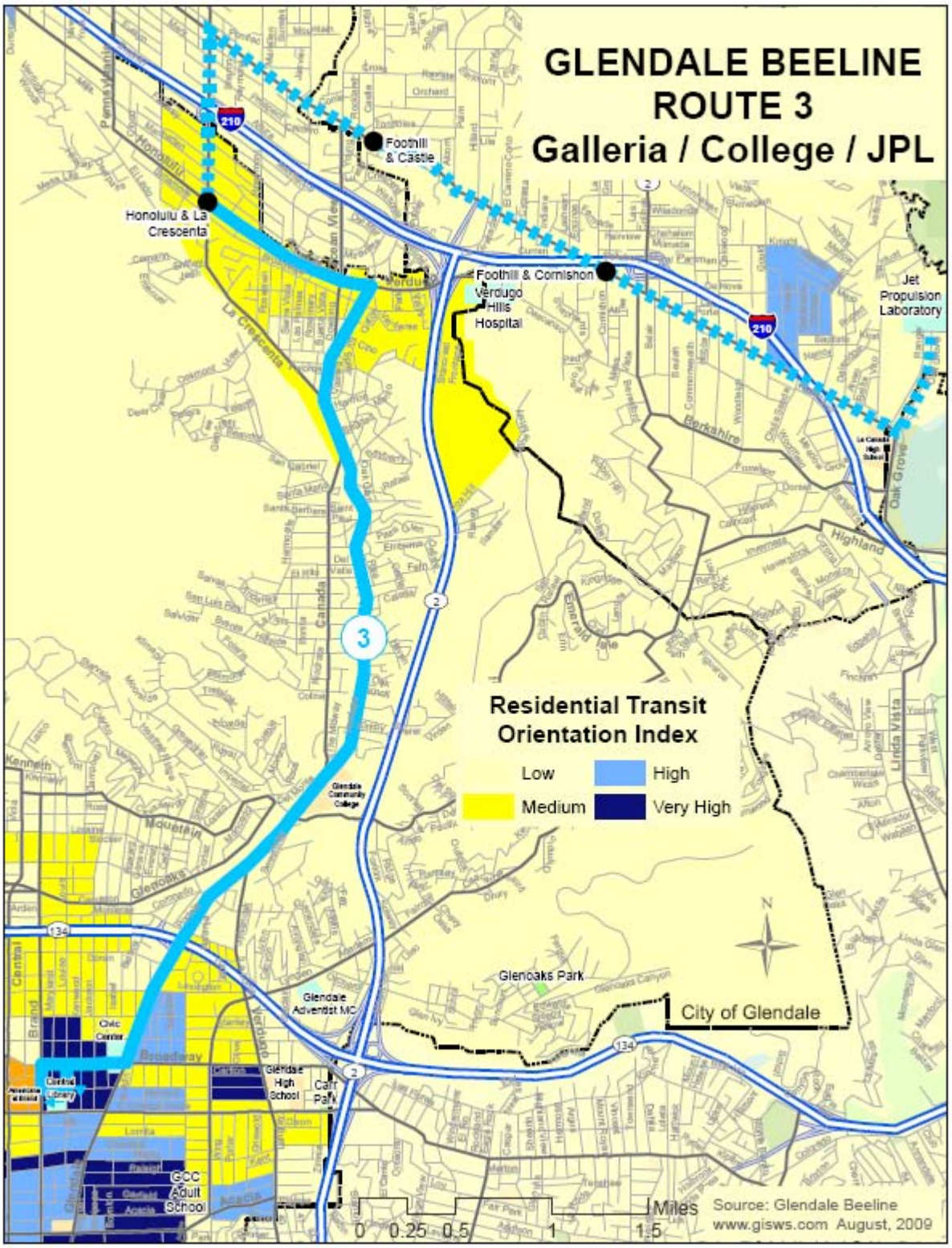
Table 9.1 presents ridership and productivity on Route 3 in La Cañada Flintridge. Almost one thousand boardings occur on a typical weekday within the city limits. This number includes boardings on regular Route 3 buses, the LCF shuttle, and the LCFX morning express. Productivity on this segment is 29.4 boardings per revenue hour.

Table 9.1
Route 3 Ridership and Productivity in La Cañada Flintridge

Route Segment	Ridership	Boardings per Revenue Hour
Foothill & Castle – JPL	985	29.4

Source: Ridecheck Data, November 2008

Figure 9.1
Route 3



The long Route 3 trips account for most of the ridership on Route 3, as shown in Table 9.2. LCF trips have 209 riders and 19.0 boardings per revenue hour. The six LCFX trips have 11 riders and 4.8 boardings per revenue hour. The remaining 765 boardings within La Cañada Flintridge occur on the long Route 3 trips.

Table 9.2
Route 3 Operating and Productivity Data Overall and by Service Type

Type of Service	Boardings	Revenue Hours	Boardings per Rev Hr
Weekday Total	3,930	94.0	41.8
Long Route 3	3,710	80.7	47.4
LCF	209	11.0	19.0
LCFX	11	2.3	4.8

Source: Ridecheck Data, November 2008

Figures 9.2 and 9.3 indicate boardings and alightings along Route 3 in both directions. La Cañada High School is the most important trip generator on this route segment, particularly in the afternoon. JPL is also an important destination, but is less important to the route than the schools, especially because many of the boardings and alightings at JPL are transfers to and from Metro Line 177 serving Pasadena.

Figure 9.2
Northbound Route 3
Boardings and Alightings

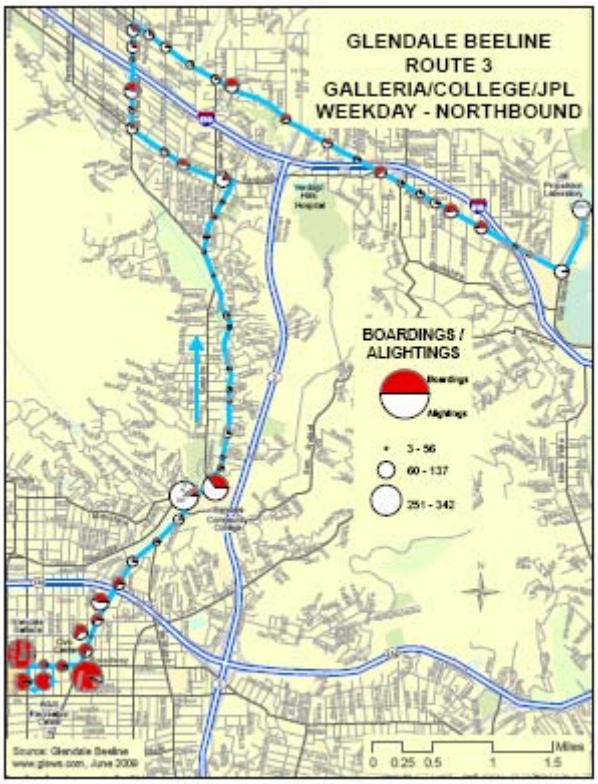


Figure 9.3
Southbound Route 3
Boardings and Alightings

One of the issues in the operation of Route 3 in La Cañada Flintridge is the scheduling of regular Route 3 buses to/from Glendale and the LCF shuttle. Table 9.3 shows the current northbound and southbound schedules between 7:00 and 9:00 a.m. The LCF trips are shown in bold.

Ideally, the LCF shuttle trips should be timed approximately halfway between the long Route 3 trips. In three of four instances, however, the LCF shuttle trip is within five minutes of the long Route 3 trip, and the 8:04 northbound and 8:19 southbound trips are virtually on top of the long Route 3 trips. In some cases, particularly around school bell times in the afternoon, scheduling two trips this closely is a good practice. In other cases, scheduling a short trip five minutes before a long trip can distribute loads more efficiently, minimizing overcrowding on the long trip.

Neither of these cases reflects the morning situation in La Cañada Flintridge, and the scheduling may be a contributing factor to the relatively low ridership and productivity on the LCF shuttle.

Table 9.3
Current Route 3 Schedule in La Cañada Flintridge during the Morning Peak

Northbound			Southbound		
Foothill & Castle	**Foothill & Verdugo**	**JPL**	**JPL**	**Foothill & Verdugo**	**Foothill & Castle**
6:45 AM	6:52 AM	6:59 AM	7:00 AM	7:08 AM	7:14 AM
7:00 AM	**7:07 AM**	**7:14 AM**	**7:15 AM**	**7:23 AM**	**7:29 AM**
7:05 AM	7:12 AM	7:19 AM	7:20 AM	7:28 AM	7:34 AM
7:25 AM	7:32 AM	7:39 AM	7:40 AM	7:48 AM	7:54 AM
7:32 AM	**7:39 AM**	**7:46 AM**	**7:47 AM**	**7:55 AM**	**8:01 AM**
7:45 AM	7:52 AM	7:59 AM	8:00 AM	8:08 AM	8:14 AM
8:04 AM	**8:11 AM**	**8:18 AM**	**8:19 AM**	**8:27 AM**	**8:33 AM**
8:05 AM	8:12 AM	8:19 AM	8:20 AM	8:28 AM	8:34 AM
8:25 AM	8:32 AM	8:39 AM	8:40 AM	8:48 AM	8:54 AM
8:45 AM	8:52 AM	8:59 AM	9:00 AM	9:08 AM	9:14 AM
8:50 AM	**8:57 AM**	**9:04 AM**	**9:05 AM**	**9:13 AM**	**9:19 AM**

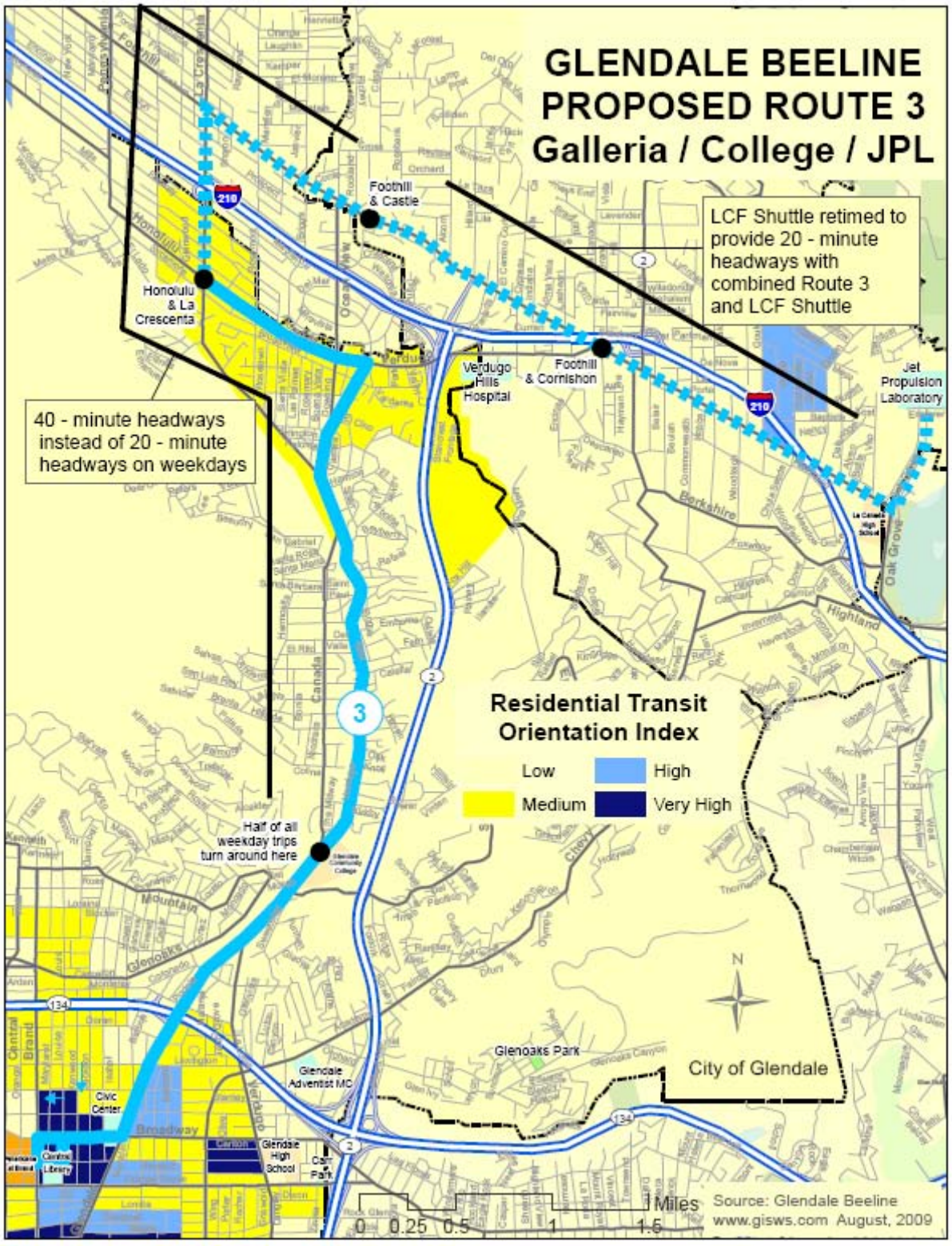
Source: Beeline Schedules

9.2 Route 3 Recommendation and What It Means for La Cañada Flintridge

Five options were identified for Route 3 in Chapter 8. The recommended option for Route 3 (shown in Figure 9.4) is to truncate half of all Route 3 trips at GCC, add a p.m. trip to address overcrowding, adjust the schedule of the LCF shuttle to provide a reliable 20-minute headway in La Cañada Flintridge, and discontinue the LCF express in the morning and use the resources in the afternoon.

Since La Cañada Flintridge is purchasing another bus for the LCF shuttle, La Cañada Flintridge should keep the current LCF shuttle bus to use for the LCF tripper service in the afternoon, and return the LCF express bus to the Beeline. This option reduces the number of buses required on Route 3 from eight to six (three buses on the entire route, one bus for Glendale – GCC service, one bus for the LCF shuttle, and one bus for the afternoon LCF supplemental service).

Figure 9.4
Route 3 Recommendation



This recommendation has the following effects on Beeline transit service in La Cañada Flintridge:

1. Through service between Glendale and La Cañada Flintridge will operate every 40 minutes instead of every 20 minutes. There are approximately 250 through riders in each direction at Foothill & Castle, out of a total weekday ridership of 3,930. A headway of 40 minutes is appropriate for this level of demand.

2. Careful scheduling of the LCF shuttle will provide service at a reliable interval of every 20 minutes along Foothill Boulevard in La Cañada Flintridge. This should encourage ridership on the LCF shuttle.

3. The LCF shuttle will be scheduled to leave a minute ahead of a long Route 3 bus at the afternoon dismissal time of La Cañada High School to reduce overcrowding. In the present schedule, the LCF shuttle leaves 15 minutes after the long Route 3 bus at the afternoon bell time and provides no help at the busiest time of day along Foothill Boulevard.

4. The morning express will be discontinued and the resources will be reassigned to provide supplemental service in the afternoon. The six morning express trips carry only 11 passengers. There is no time savings on the morning LCF Express trips versus the regular Route 3/LCF shuttle trips; in fact, because the Express serves La Cañada High School directly, the trip to JPL is actually longer. La Cañada Flintridge will use these resources to provide additional afternoon service to reduce overcrowding at La Cañada High School.

A long-term option for the LCF shuttle is to extend it in both directions to serve more of Foothill Boulevard and provide a direct connection to the Metro Gold Line in Pasadena. Under this option, the LCF shuttle would be extended west along Foothill Boulevard to make connections with Metro Lines 90 and 91 and to serve portions of far North Glendale. Also, this option would extend the LCF shuttle east past JPL to the Del Mar or Memorial Station of the Gold Line. The eastward extension overlaps Metro Line 177 (which could spur discussions with Metro concerning operations and funding), but would provide passengers with a single-seat ride along Foothill Boulevard to Pasadena. This option would require an additional bus and would increase revenue hours and operating cost, so it is not recommended for implementation at this time.